

FIG. 1

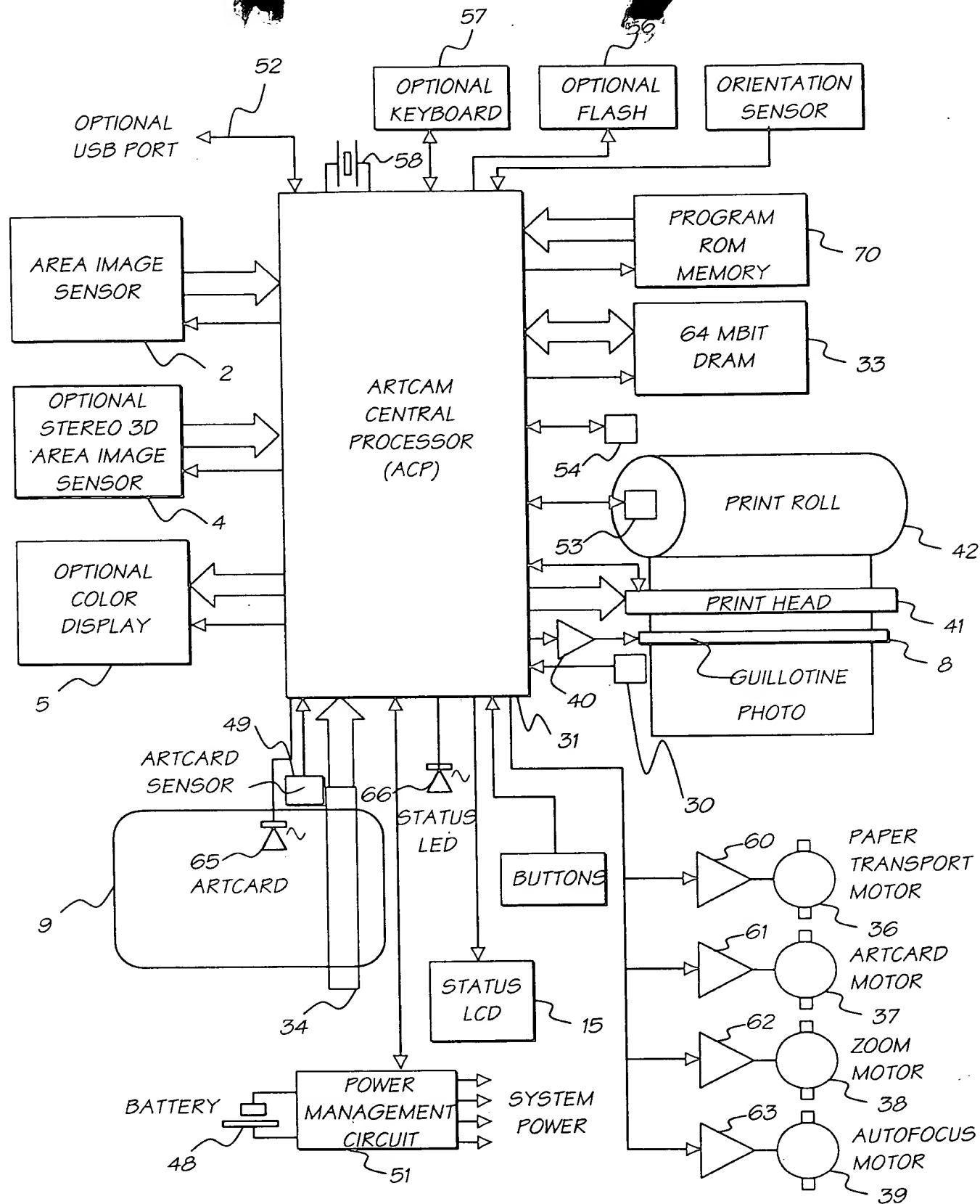


FIG. 2

09112786.071098

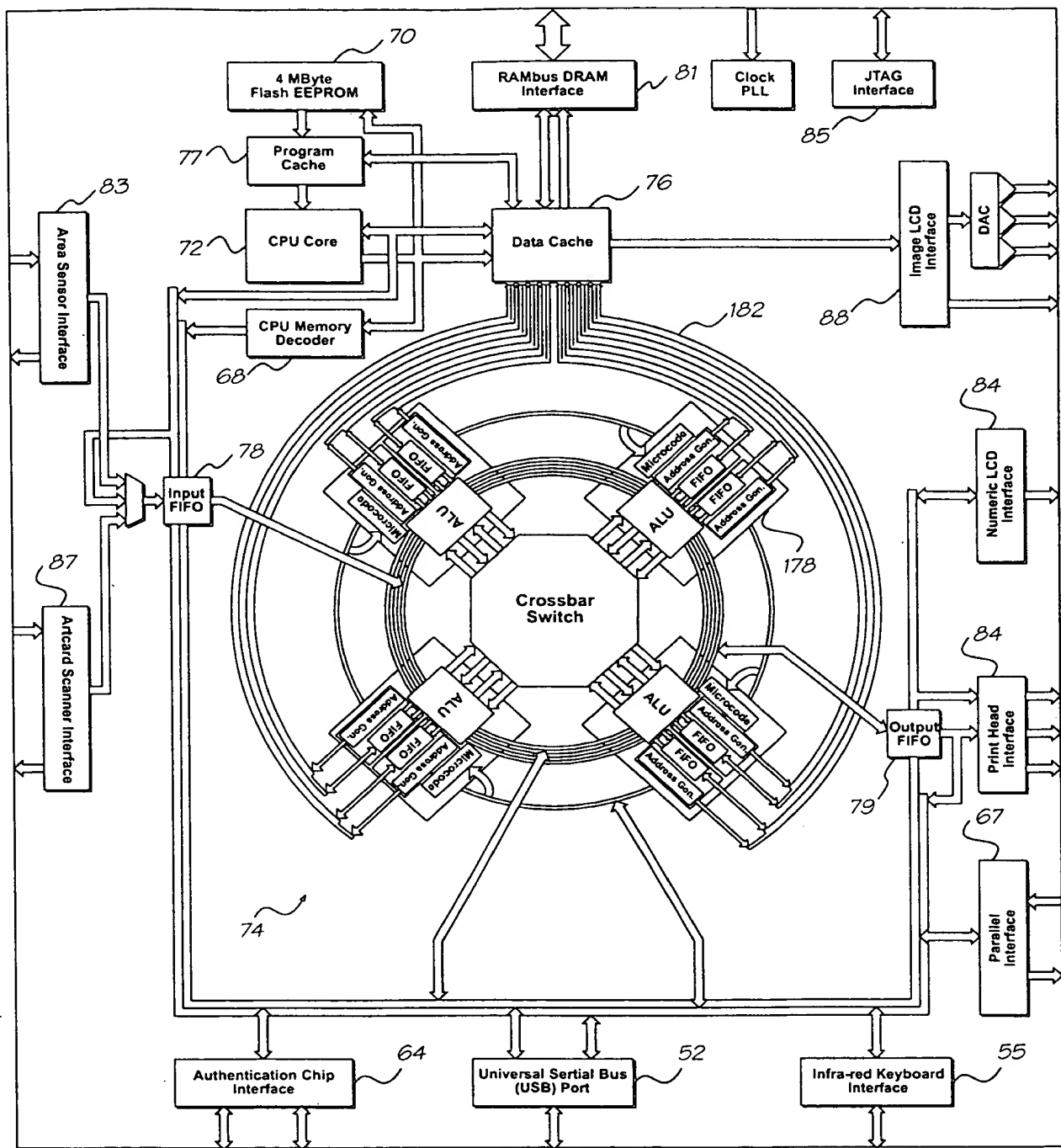


FIG. 3

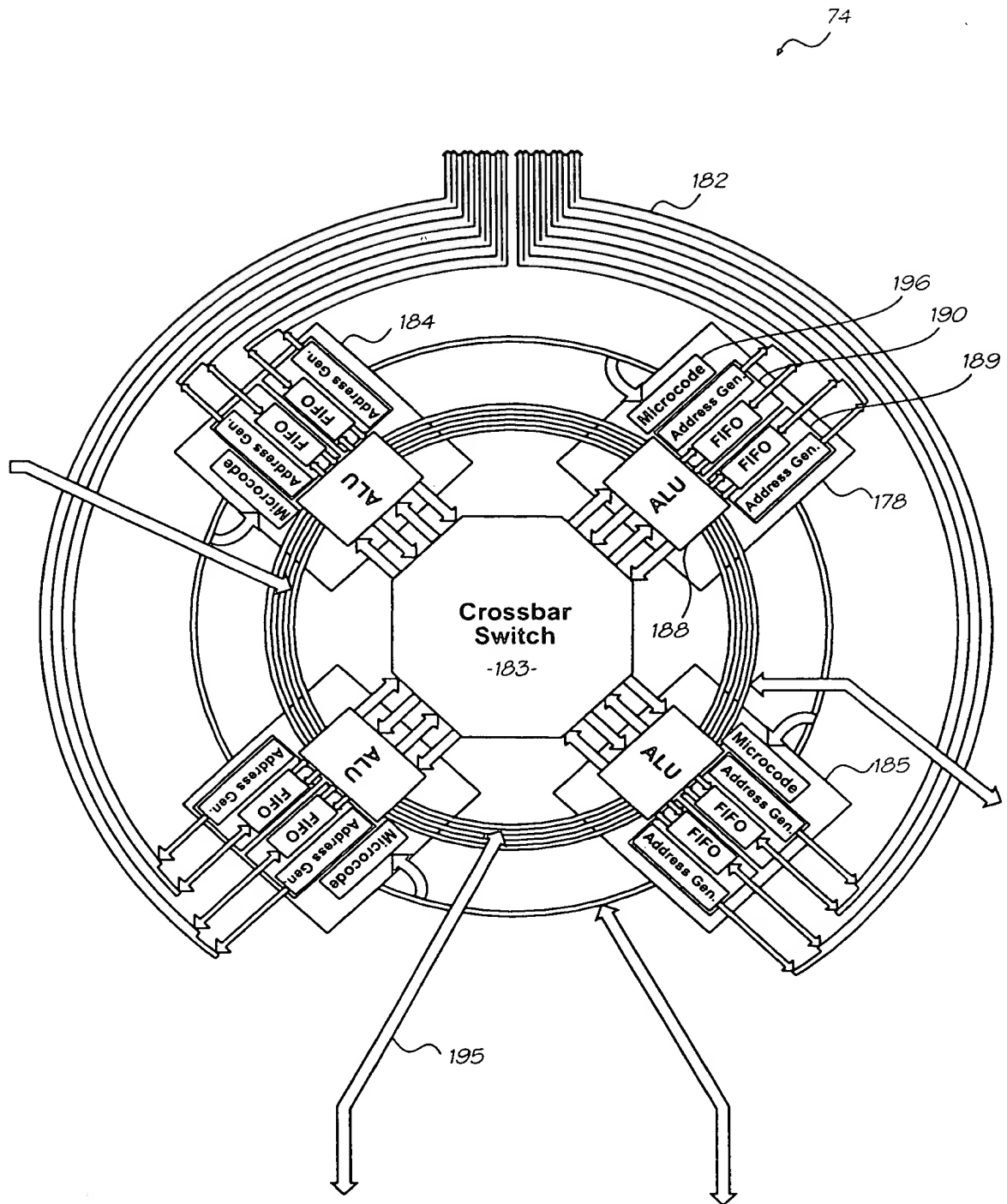


FIG. 3(a)

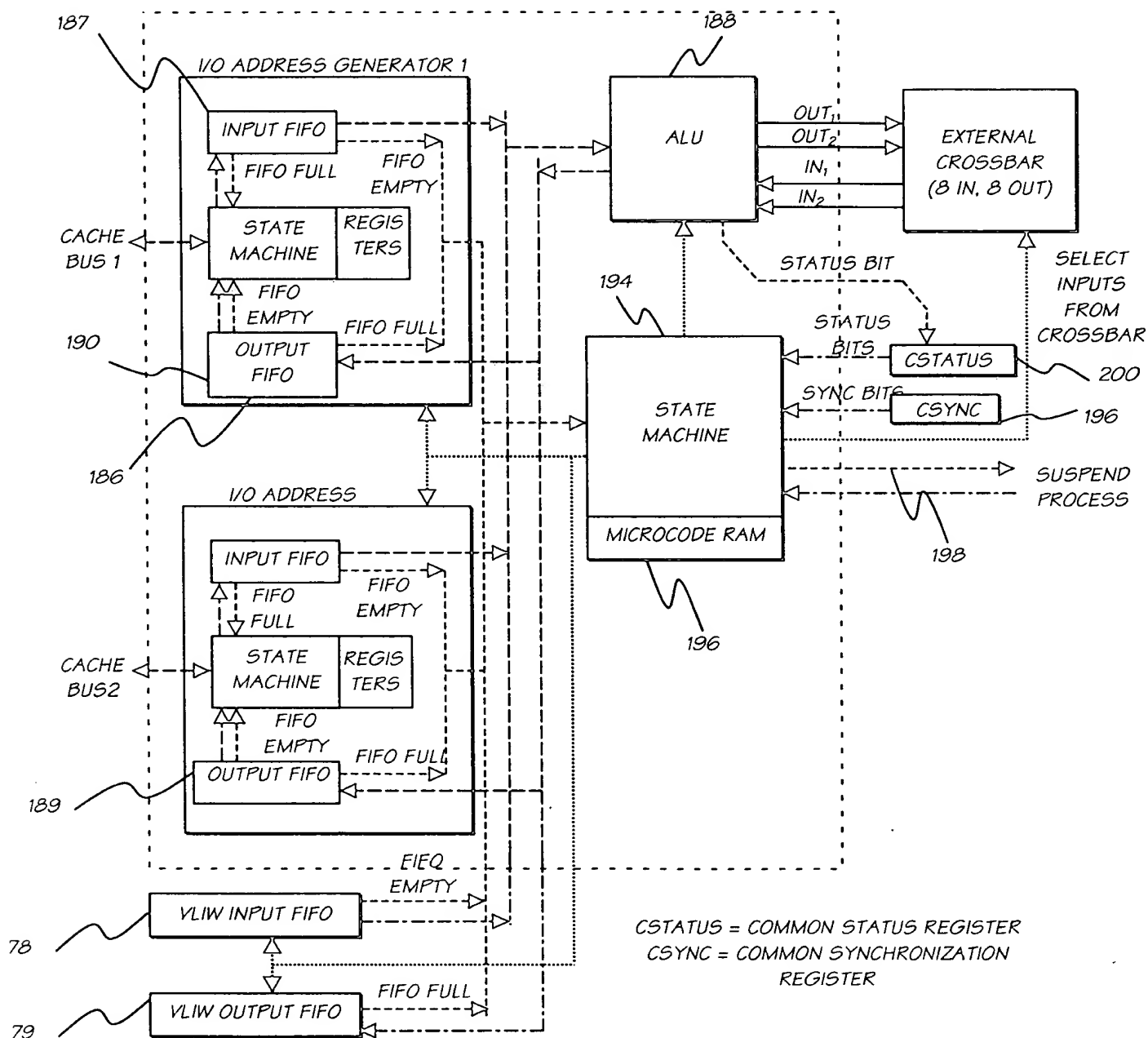


FIG. 4

09412785-074098

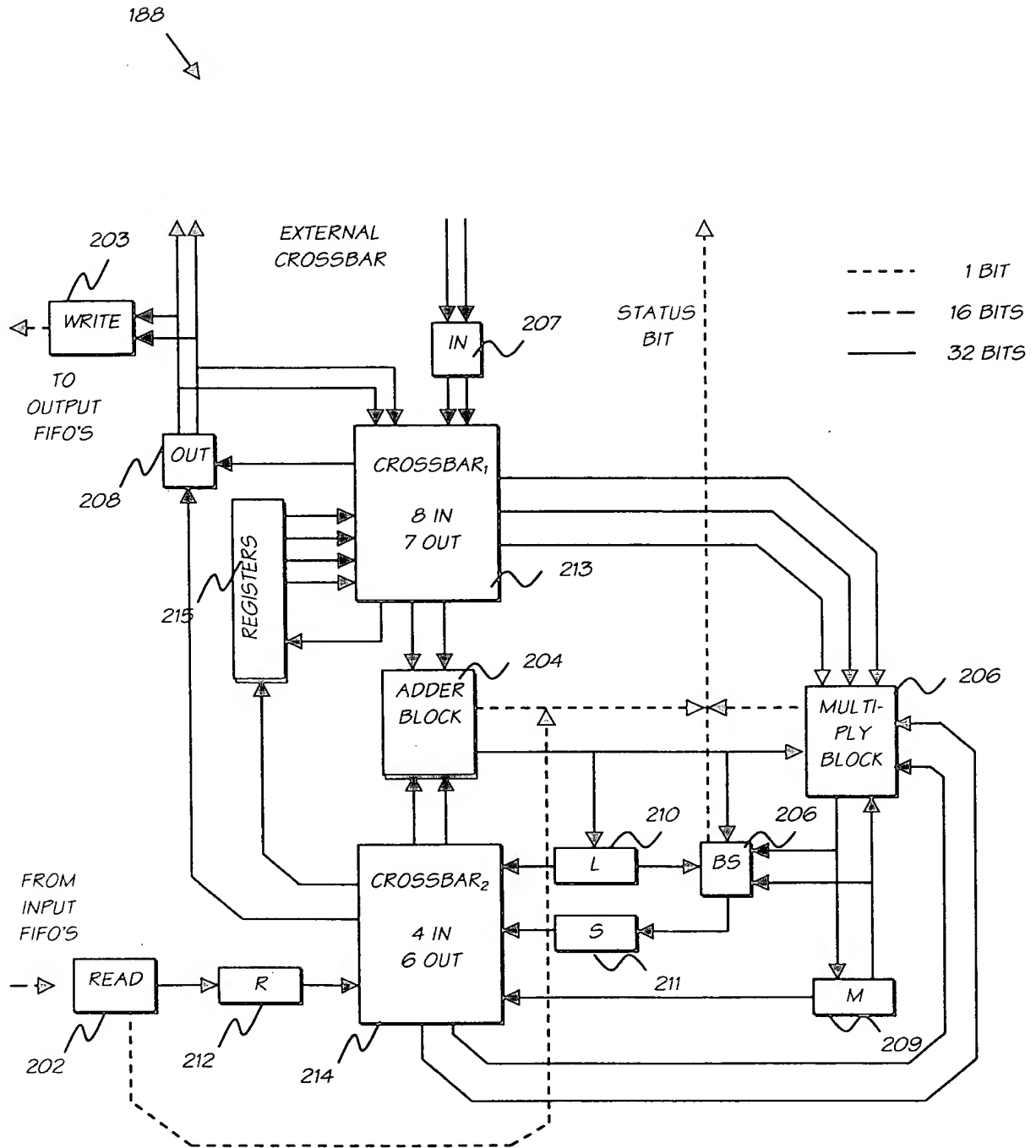


FIG. 5

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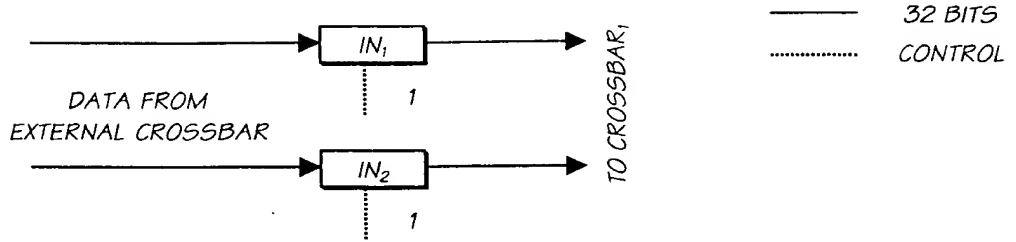


FIG. 6

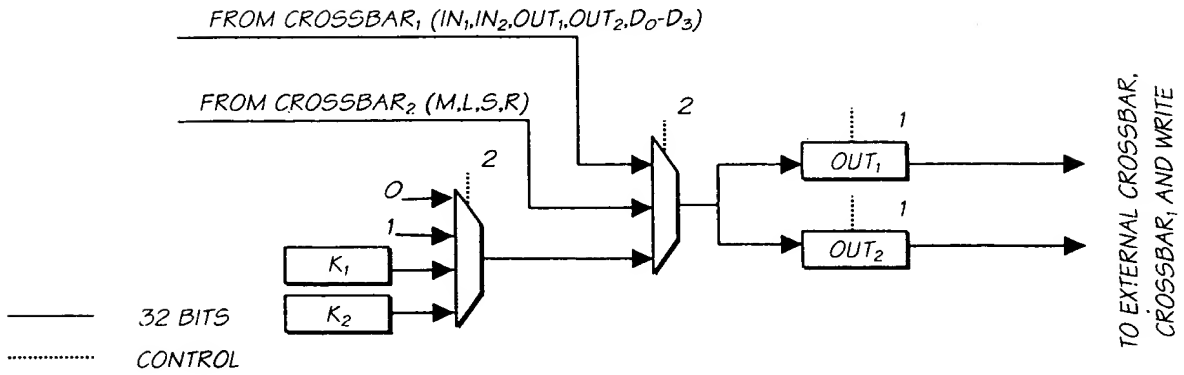


FIG. 7

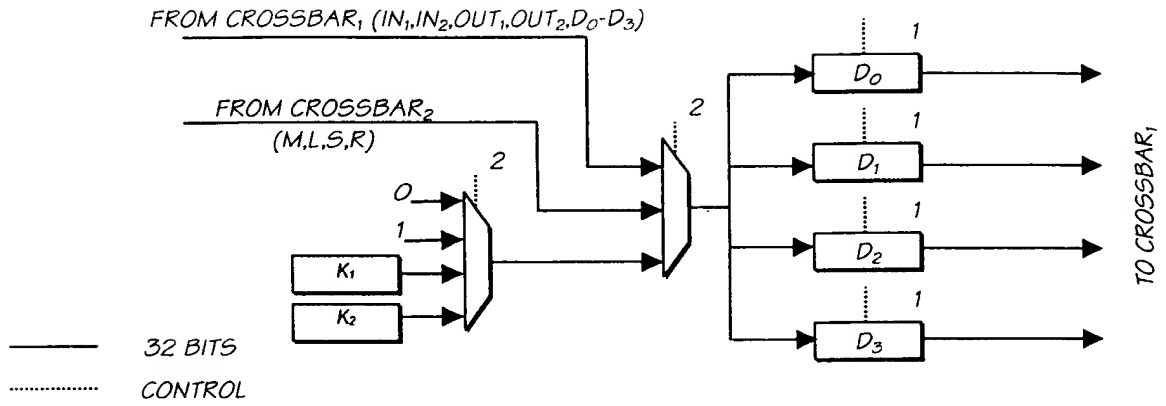


FIG. 8

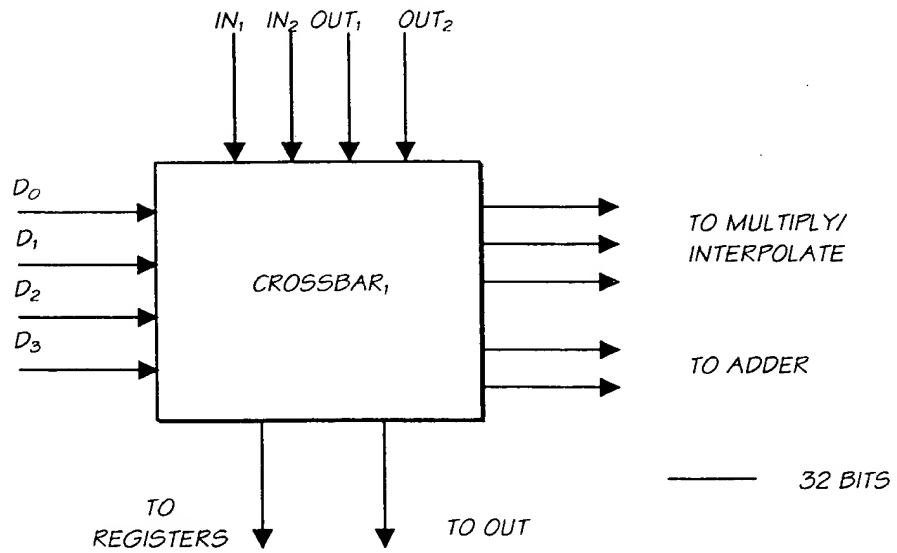


FIG. 9

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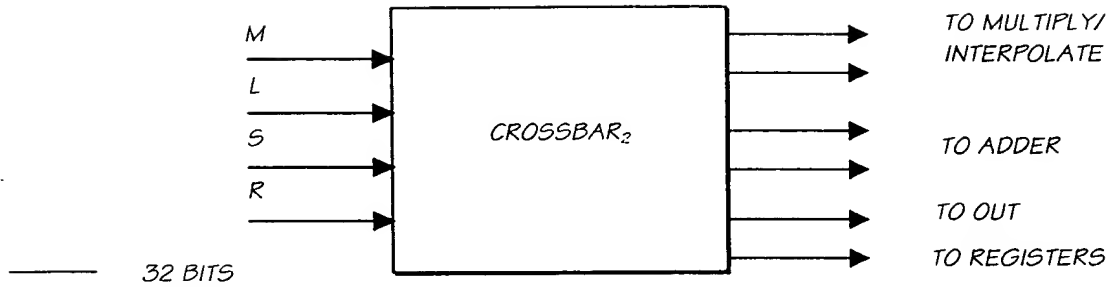


FIG. 10

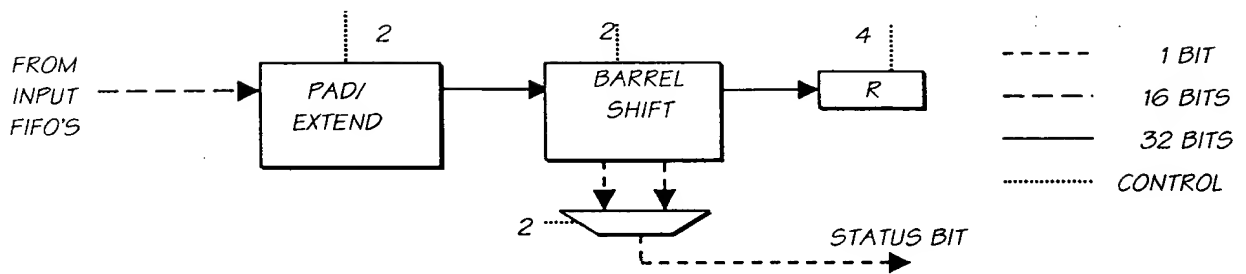


FIG. 11

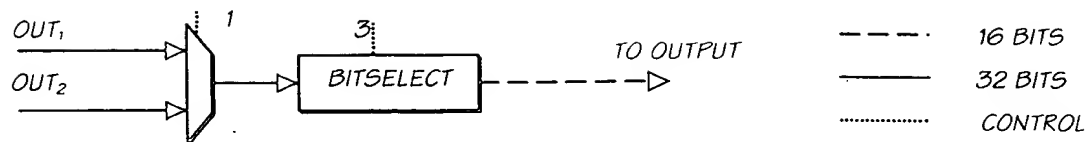


FIG. 12

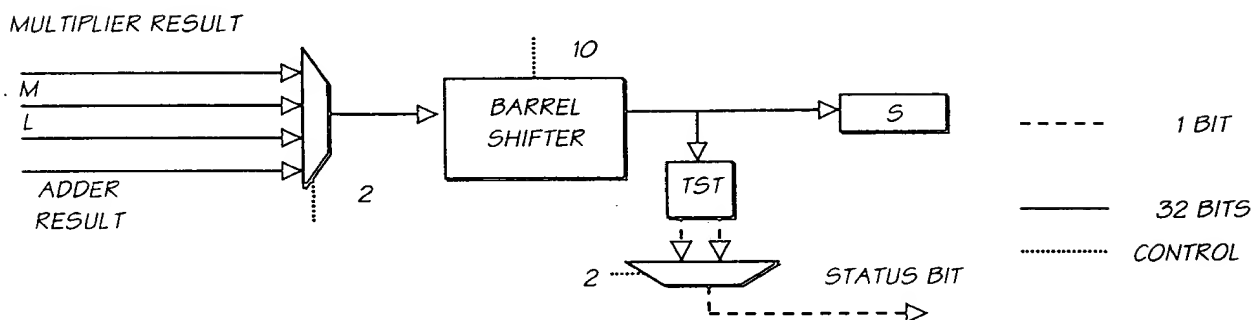


FIG. 13

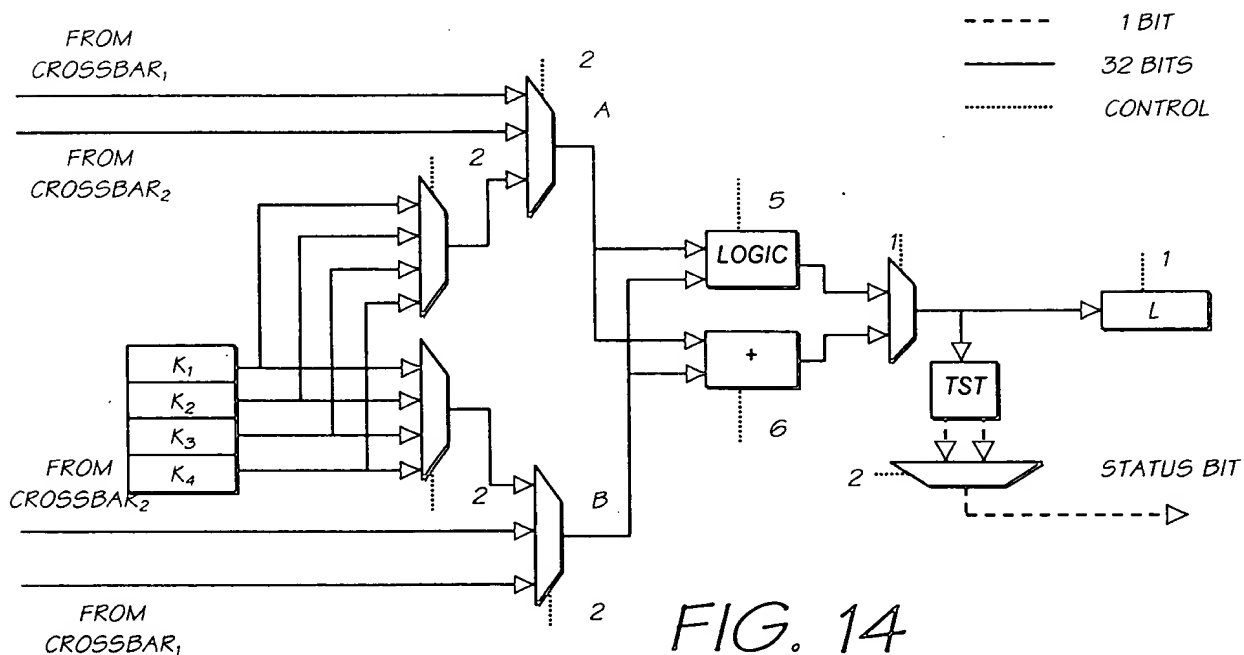


FIG. 14

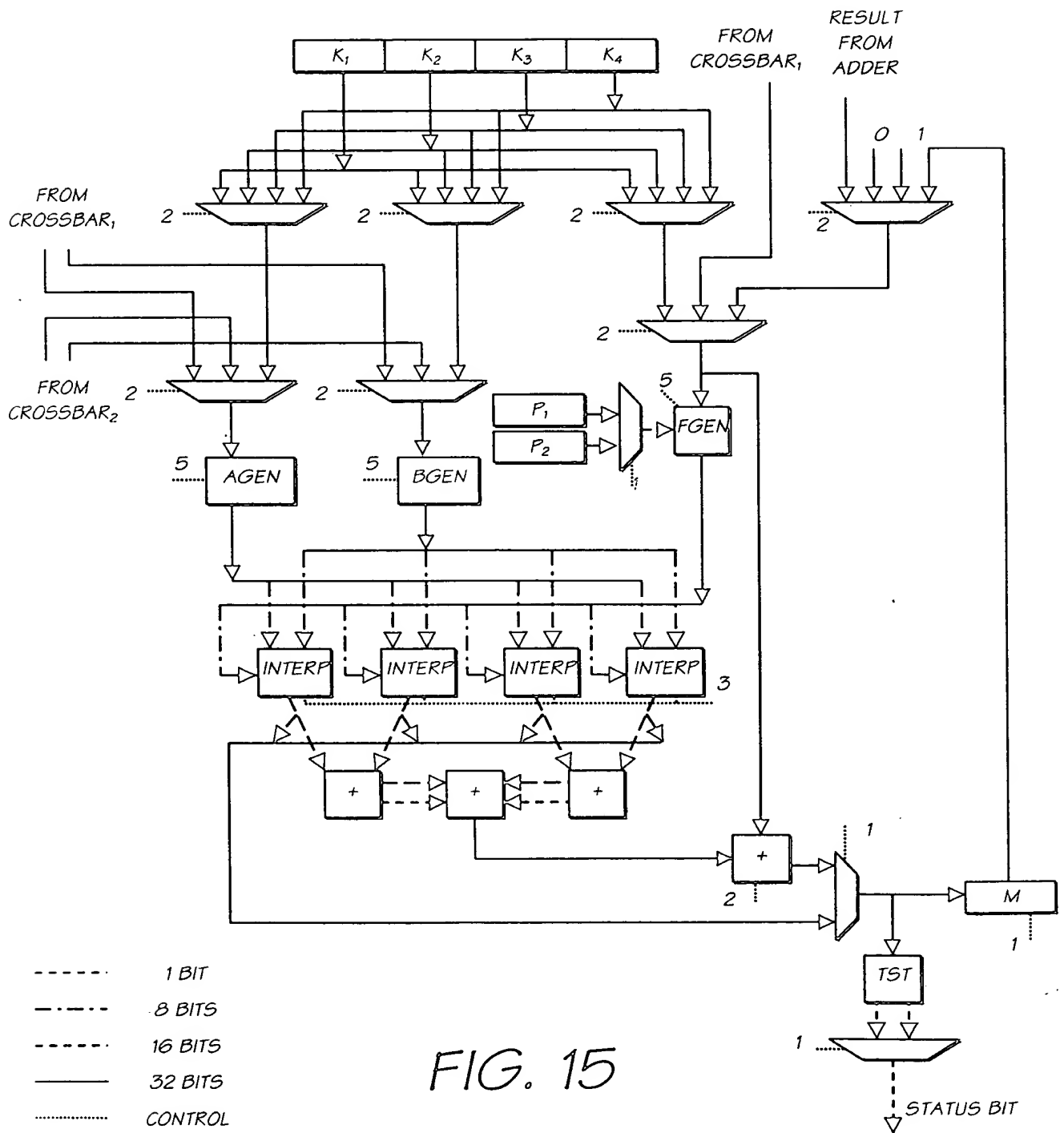


FIG. 15

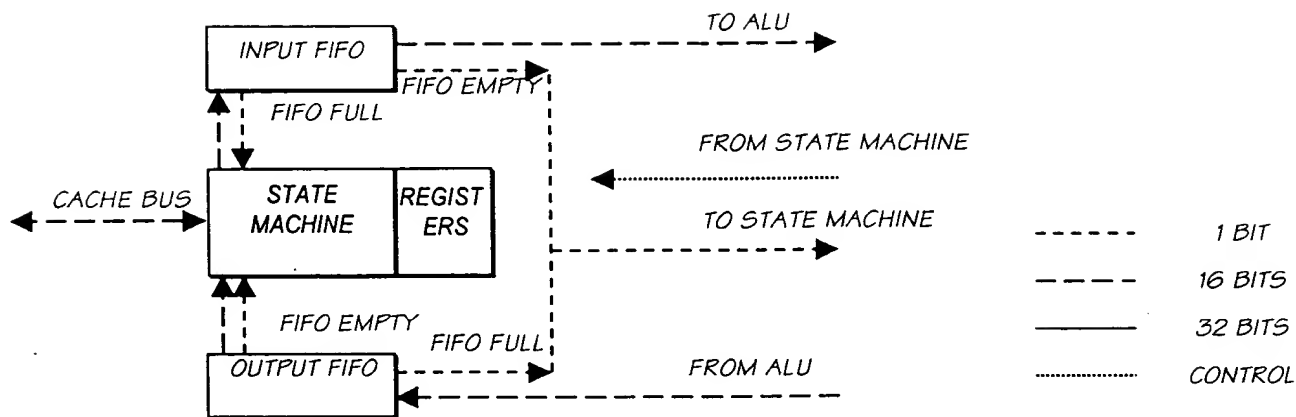


FIG. 16

ORDER OF PIXELS PRESENTED BY A SEQUENTIAL READ ITERATOR
ON A 4 X 2 IMAGE WITH PADDING.

0	1	2	3	
4	5	6	7	

FIG. 17

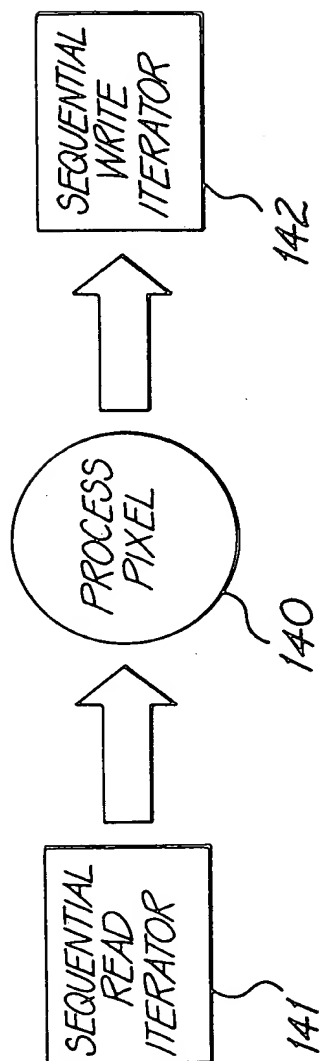
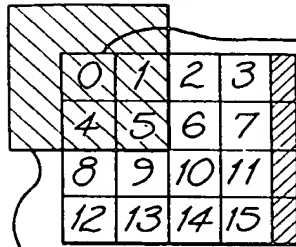


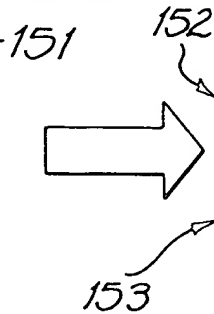
FIG. 18

A 3x3 BOX VIEW TRAVERSES THE PIXELS IN ORDER: 0,1,2,3,4,5,6,7,8 ETC,
PLACING A 3x3 BOX CENTERED OVER EACH PIXEL...

3x3 BOX VIEW OF FIRST PIXEL IN
IMAGE = 9 PIXELS, 5 OF WHICH
ARE OUTSIDE THE IMAGE



150

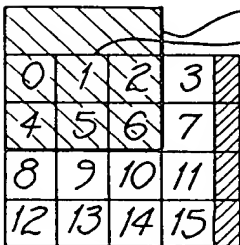


FIRST 9 PIXELS FROM THE
BOX READ ITERATOR:

IF DUPLICATION OF EDGE PIXELS IS ON:
0,0,0,0,0,1,4,4,5

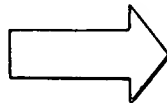
IF DUPLICATION OF EDGE PIXELS IS OFF:
V,V,V,V,0,1,V,4,5
WHERE V IS CONSTANT
"OUTSIDE IMAGE" PIXEL VALUE

3x3 BOX VIEW OF SECOND PIXEL IN
IMAGE = 9 PIXELS, 3 OF WHICH
ARE OUTSIDE THE IMAGE



155

156



SECOND 9 PIXELS FROM THE
BOX READ ITERATOR:

IF DUPLICATION OF EDGE PIXELS IS ON:
0,1,2,0,1,2,4,5,6

IF DUPLICATION OF EDGE PIXELS IS OFF:
V,V,V,0,1,2,4,5,6
WHERE V IS CONSTANT
"OUTSIDE IMAGE" PIXEL VALUE

FIG. 19

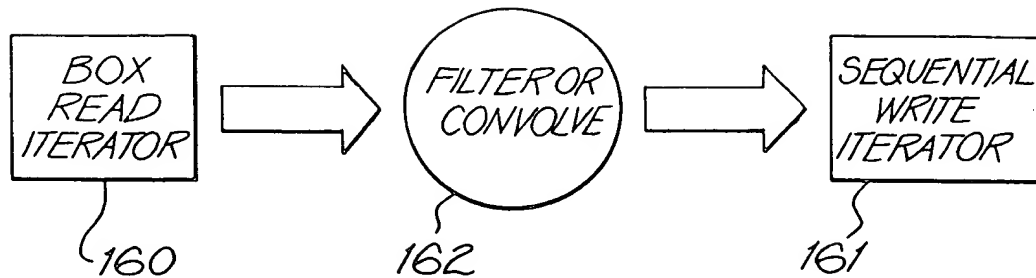
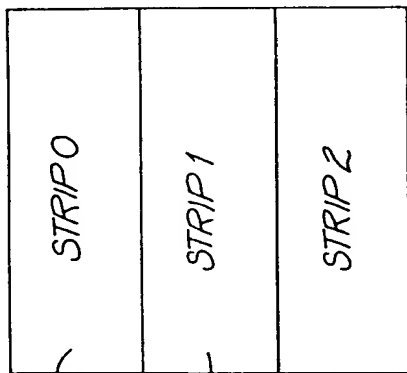


FIG. 20

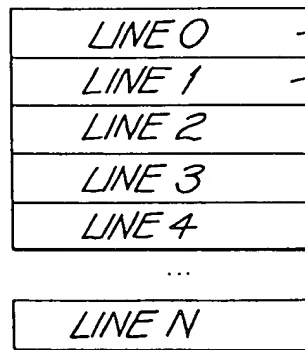
IMAGE BROKEN INTO VERTICAL STRIPS, EACH STRIP IS 32 PIXELS ACROSS.



169

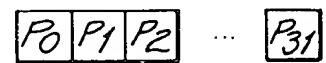
170

LINES ARE ACCESSED LINE 0 TO LINE N WITHIN A SINGLE STRIP.



166

PIXELS ARE ACCESSED PIXEL 0-PIXEL 31 WITHIN A SINGLE LINE.



167

165

FIG. 21

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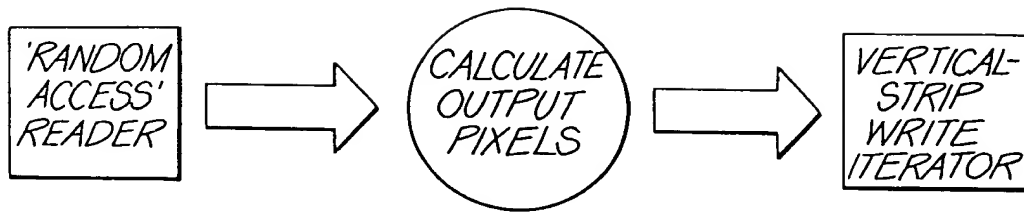


FIG. 22

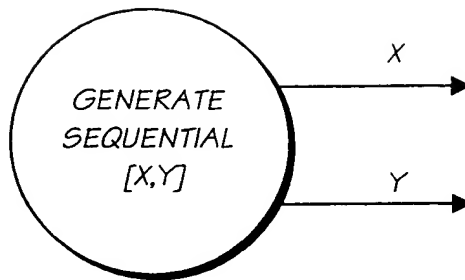


FIG. 23

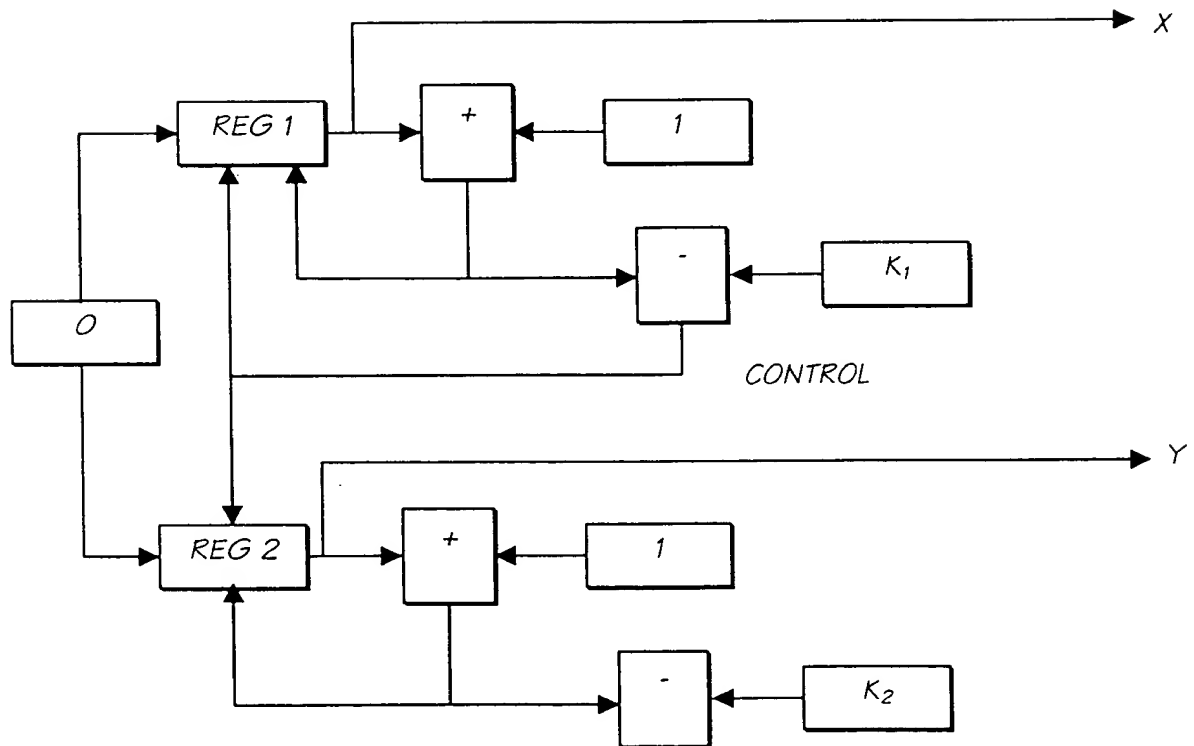


FIG. 24

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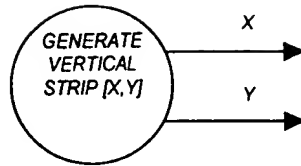


FIG. 25

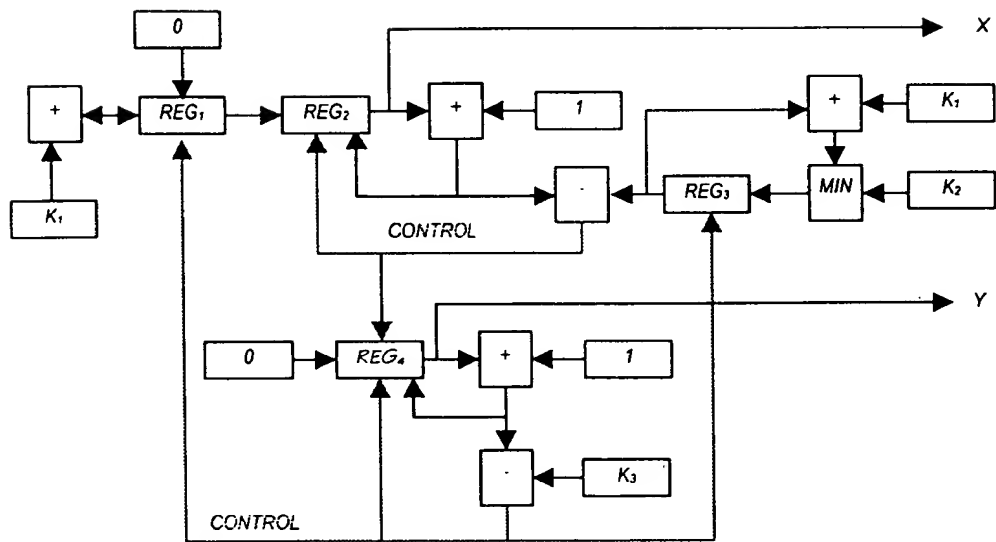
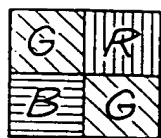


FIG. 26



2x2 PIXEL BLOCK FROM CCD

FIG. 27

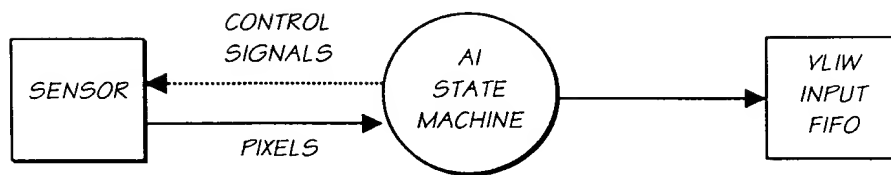


FIG. 28

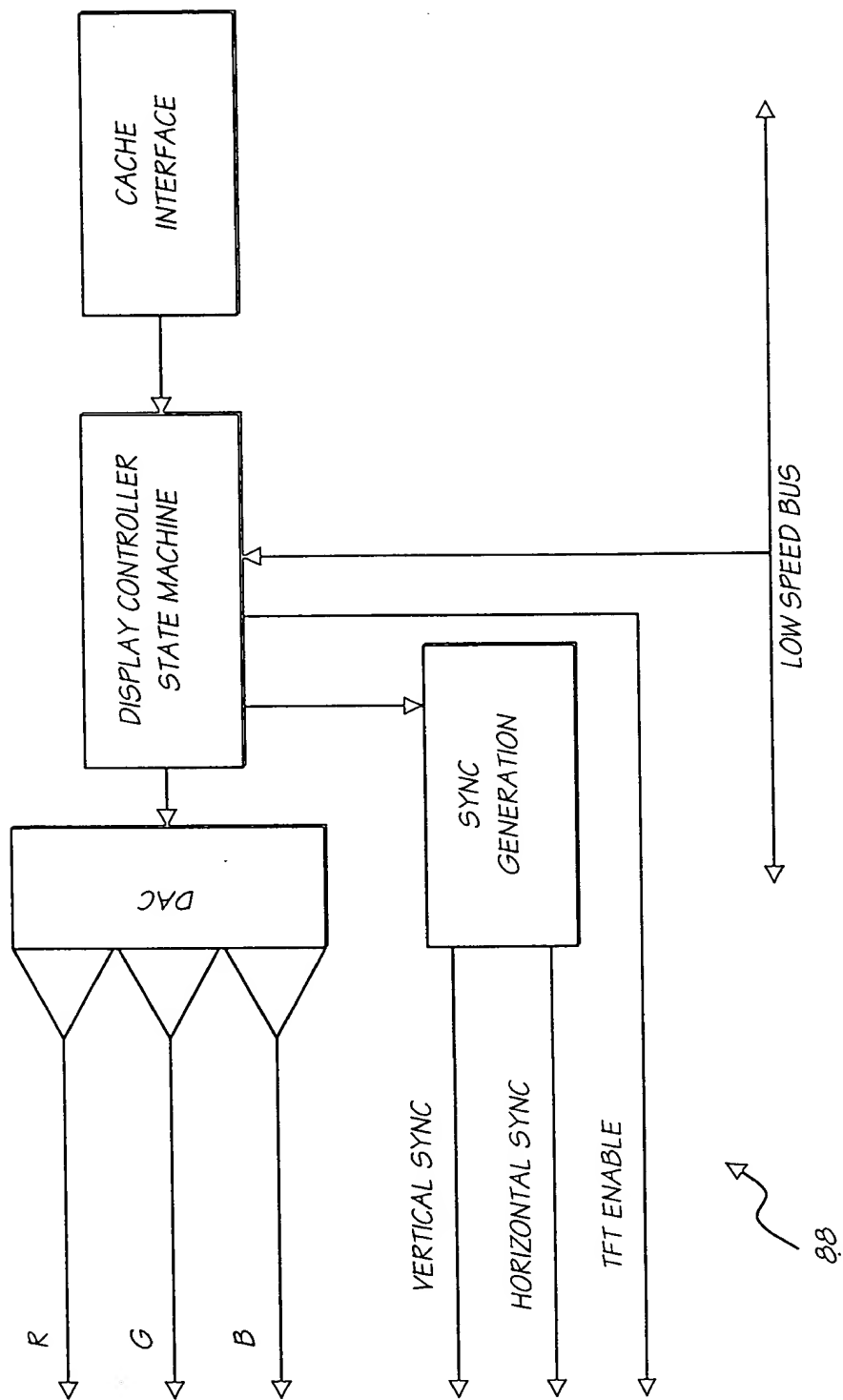
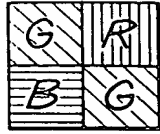


FIG. 29



2x2 PIXEL BLOCK FROM CCD

FIG. 30

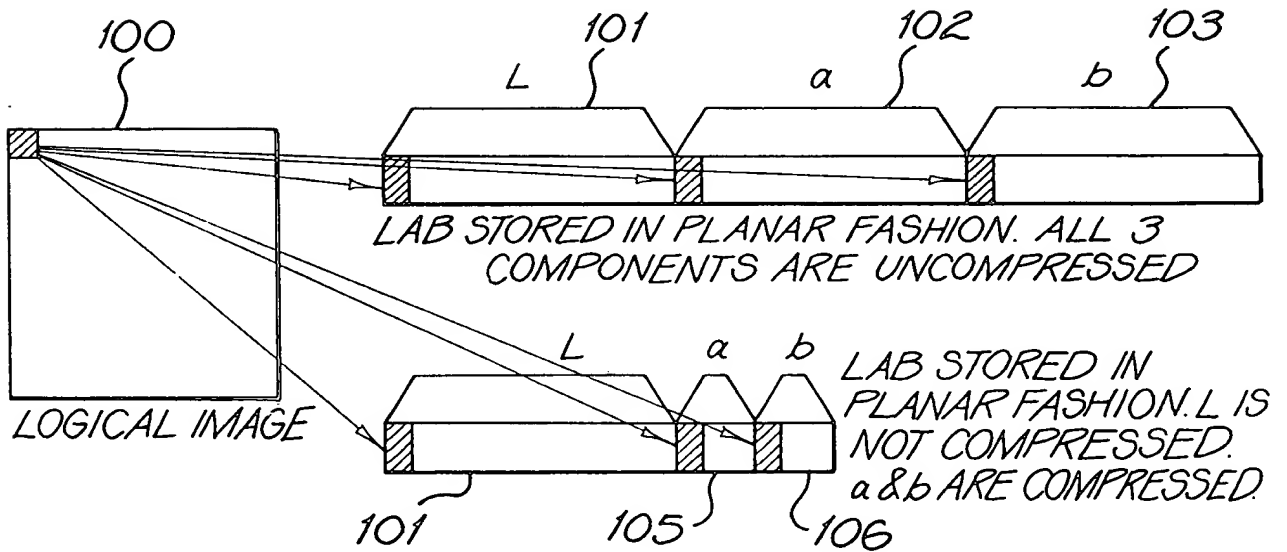


FIG. 31

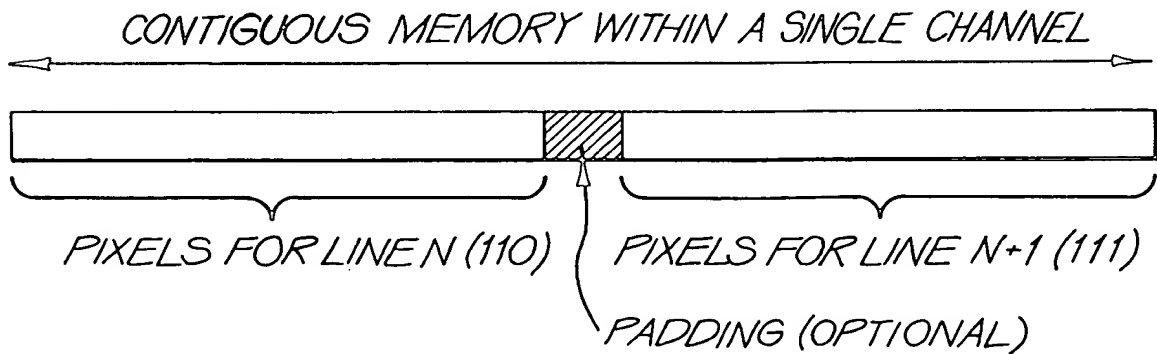


FIG. 32

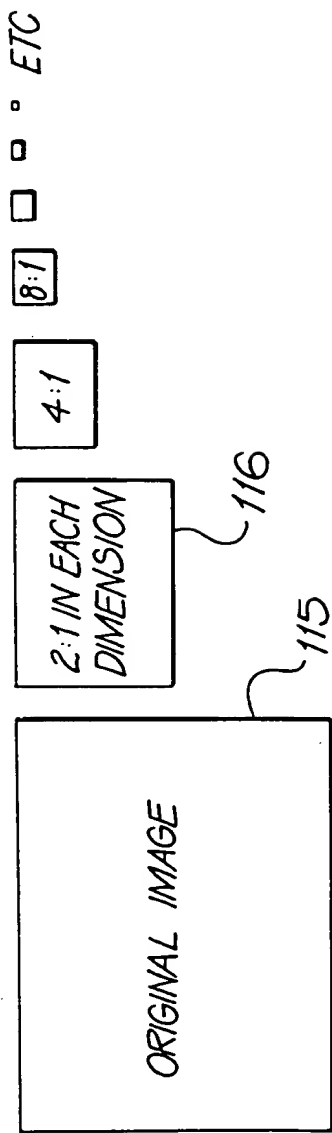


FIG. 33

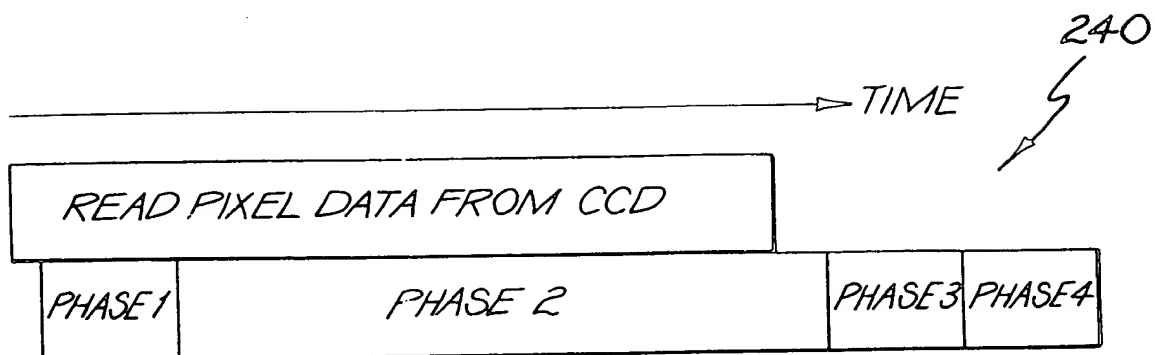


FIG. 34

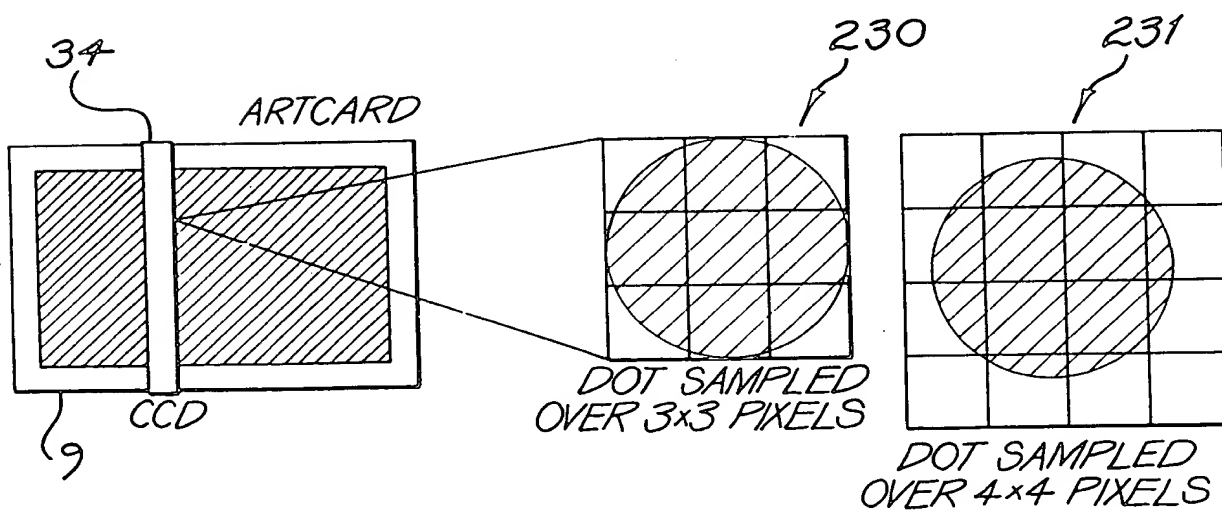


FIG. 35

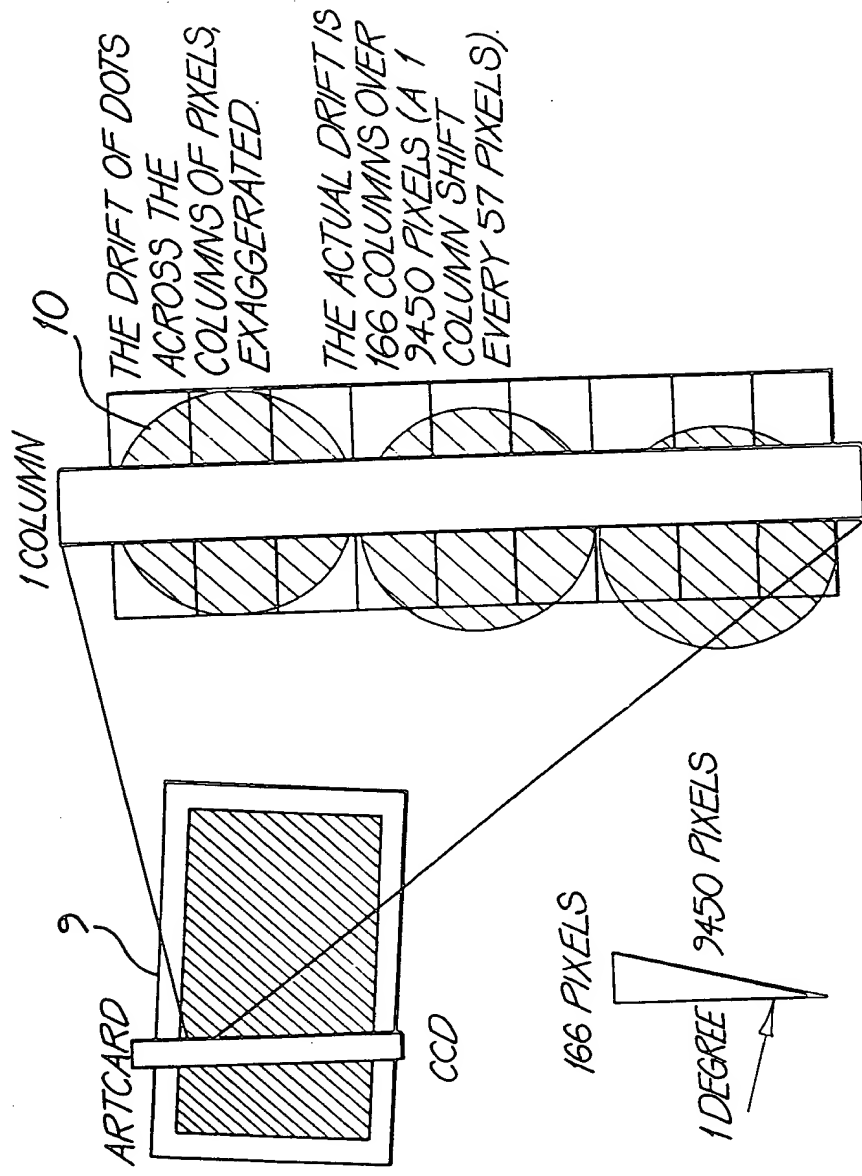


FIG. 36

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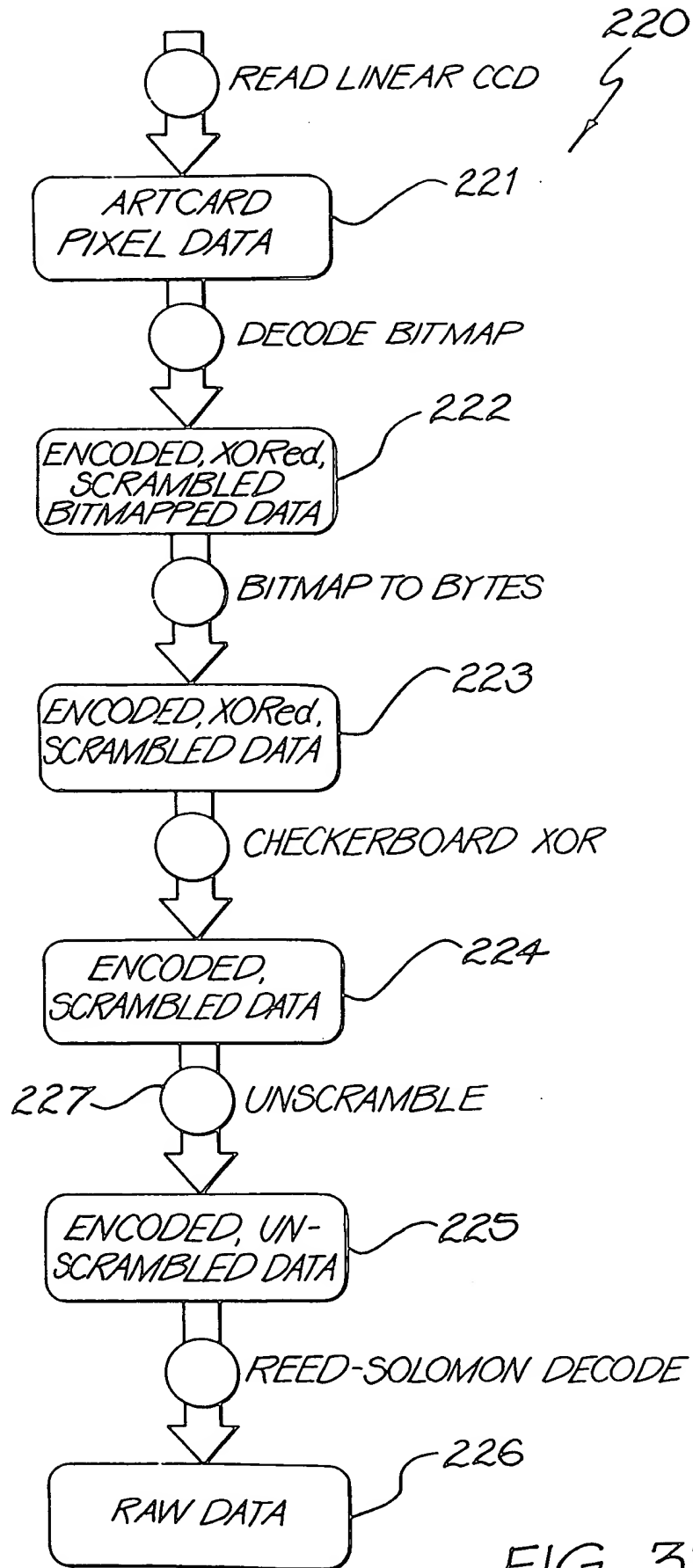


FIG. 37

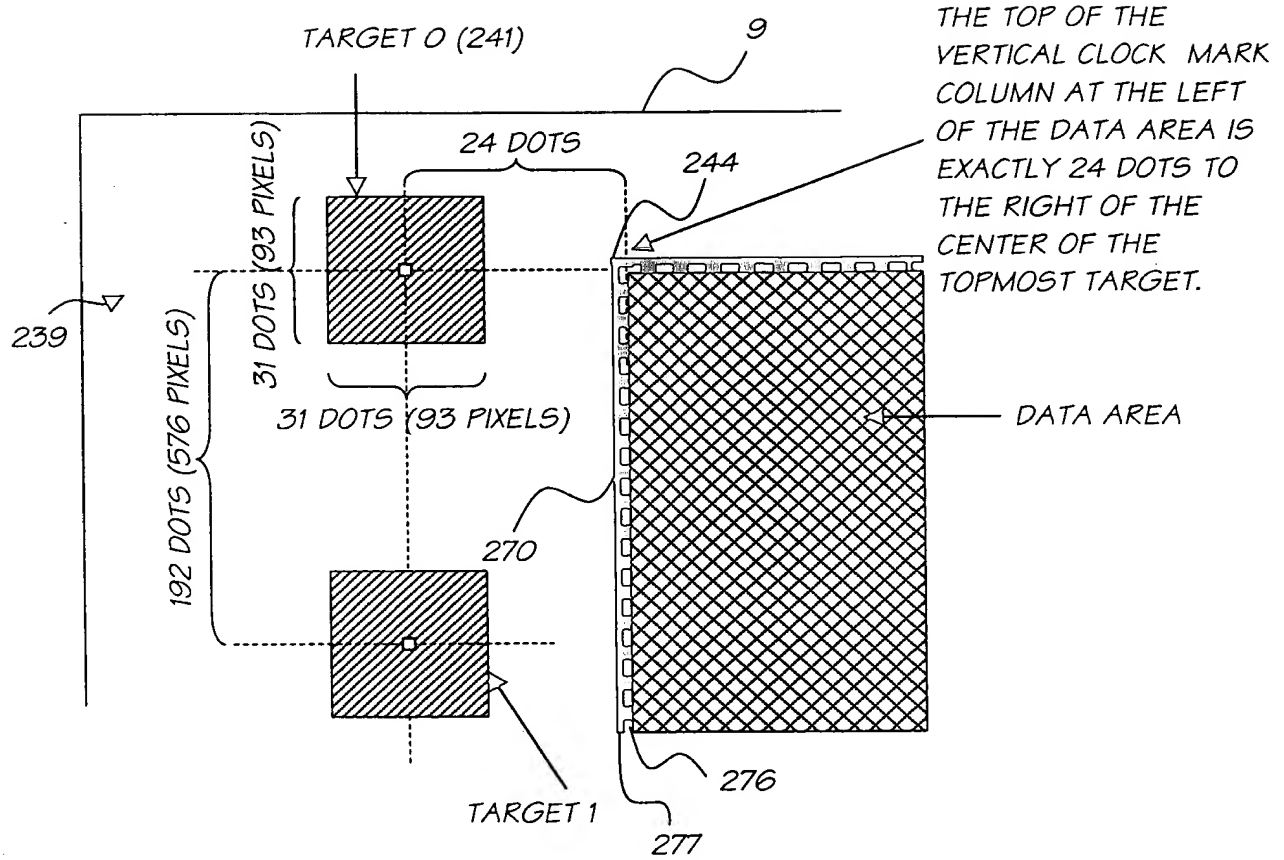


FIG. 38

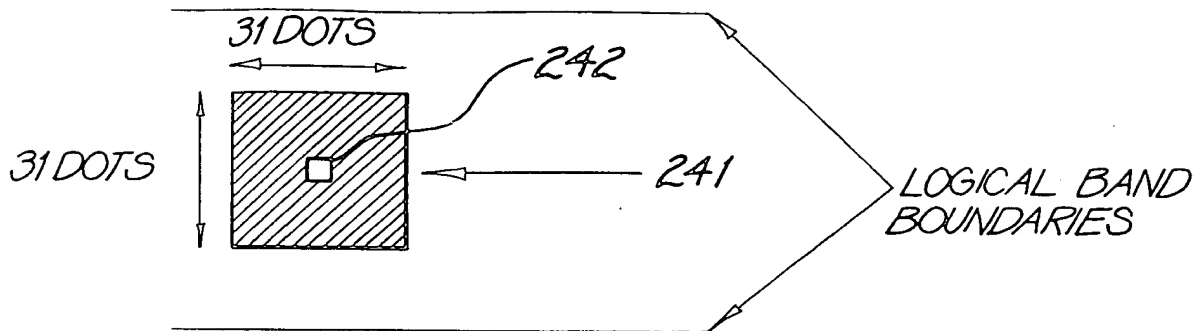


FIG. 39

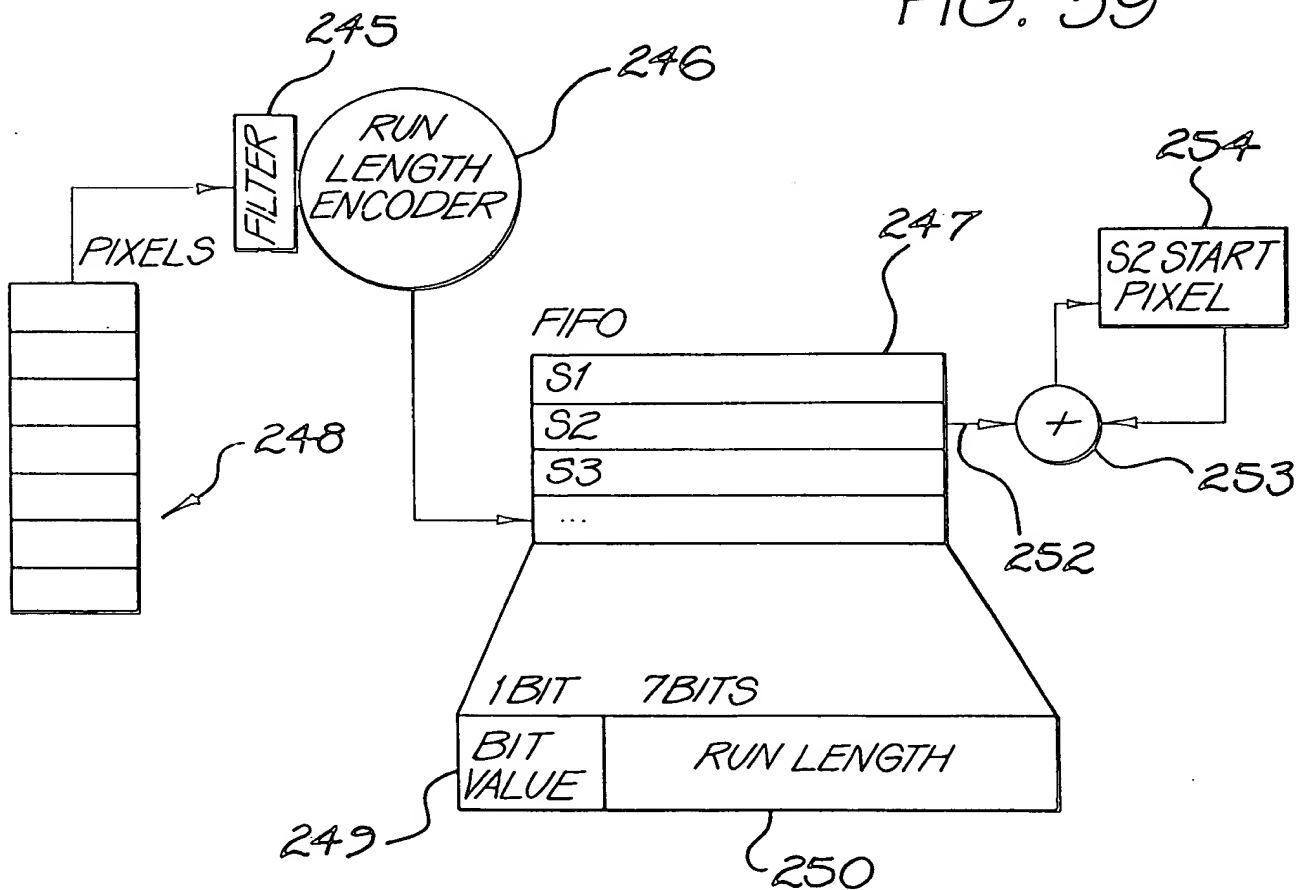


FIG. 40

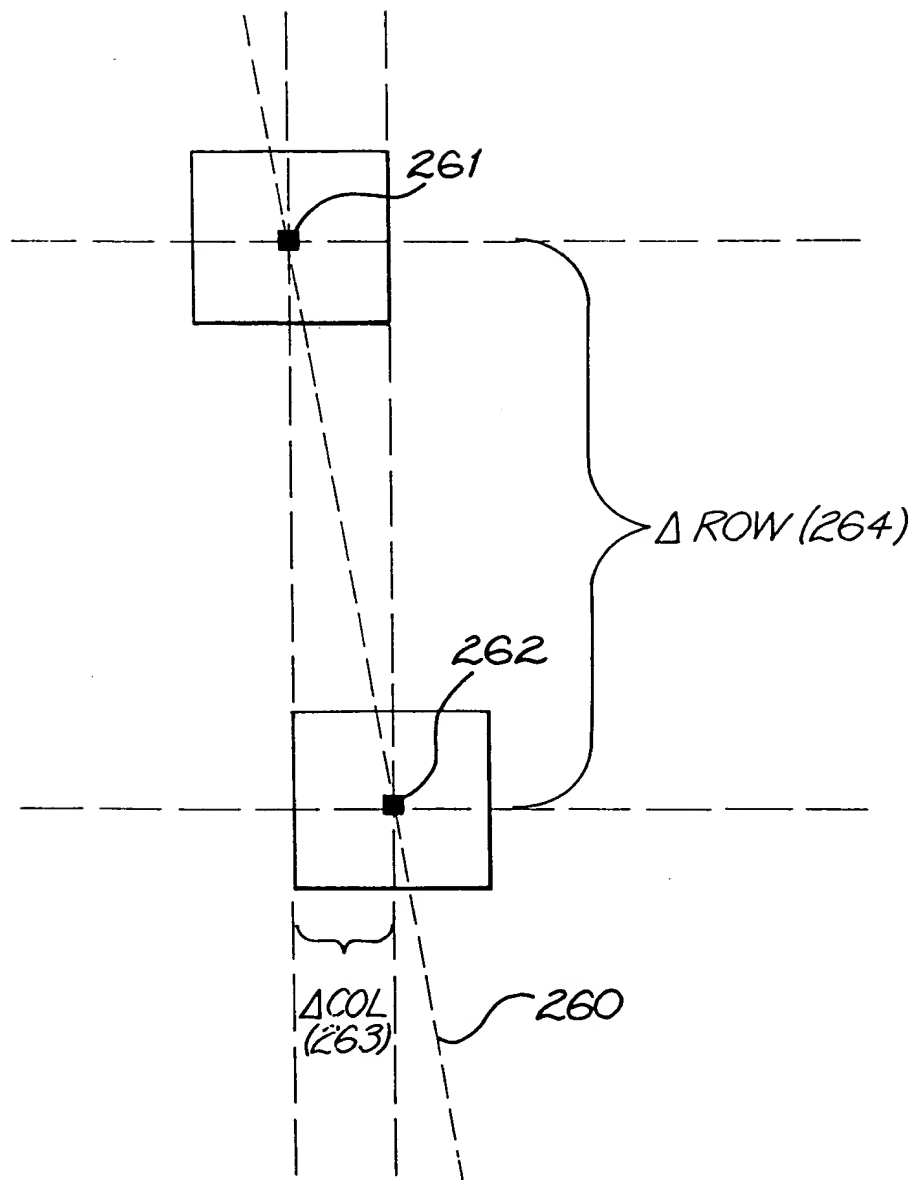
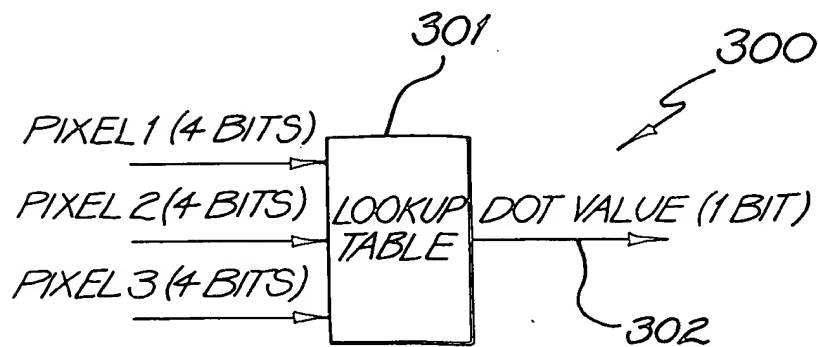
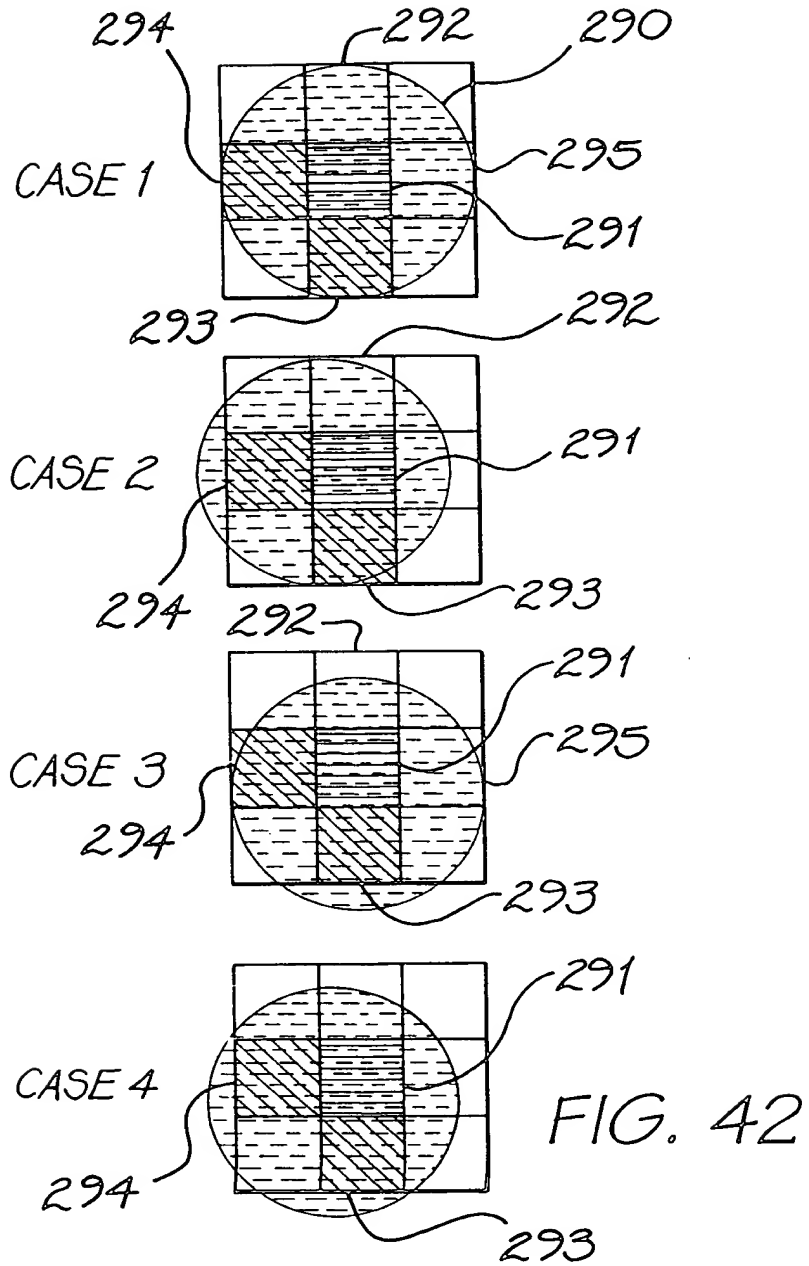


FIG. 41



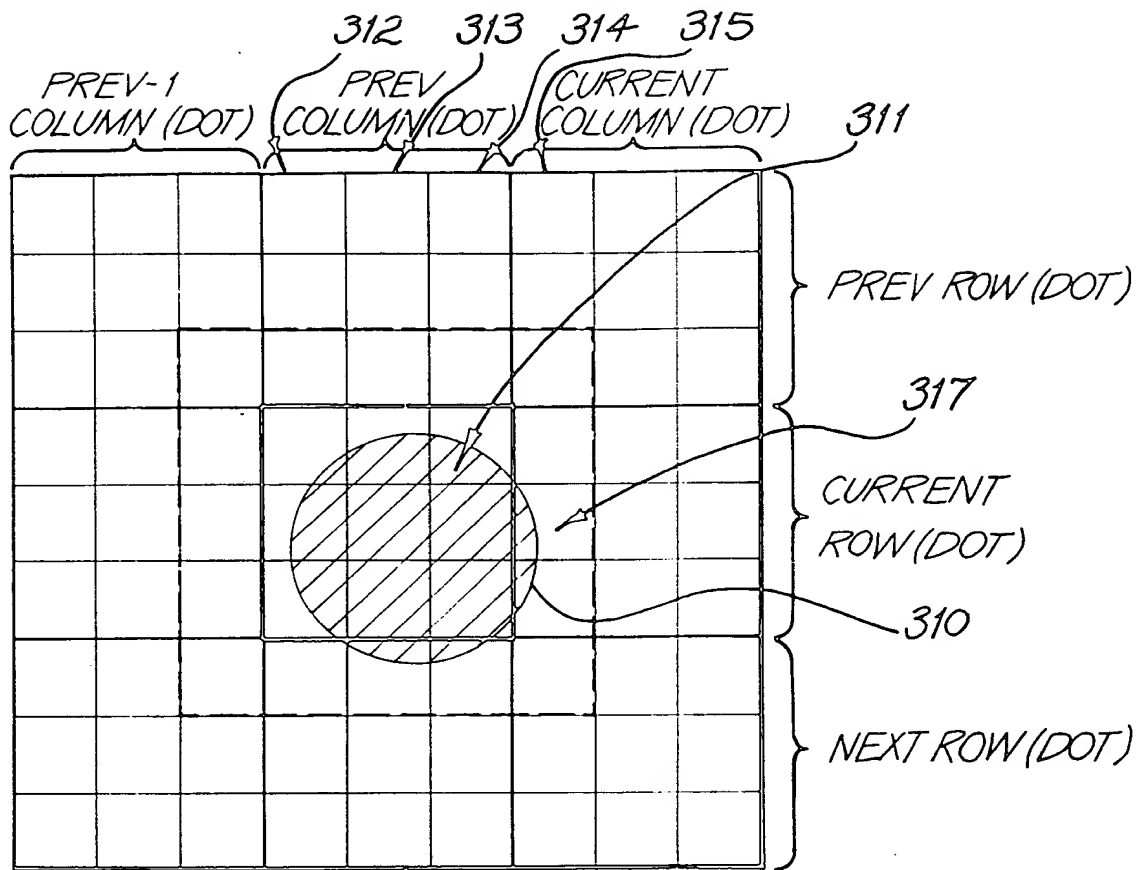


FIG. 44

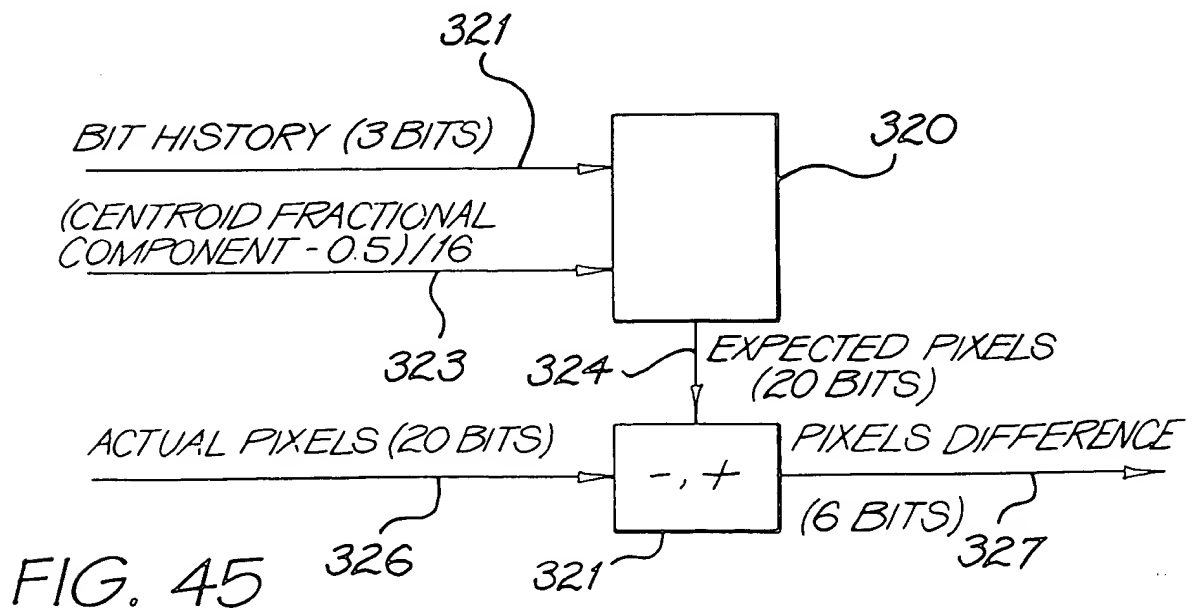


FIG. 45

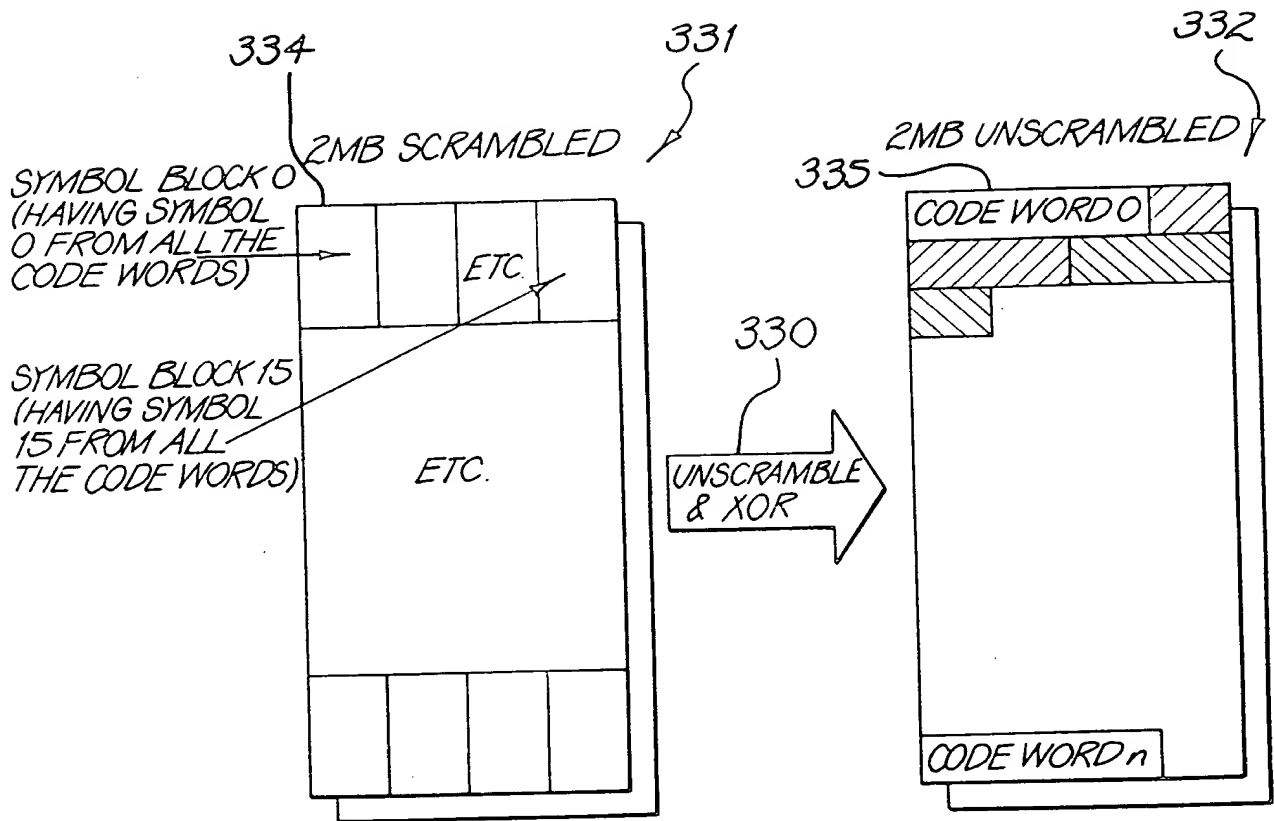


FIG. 46

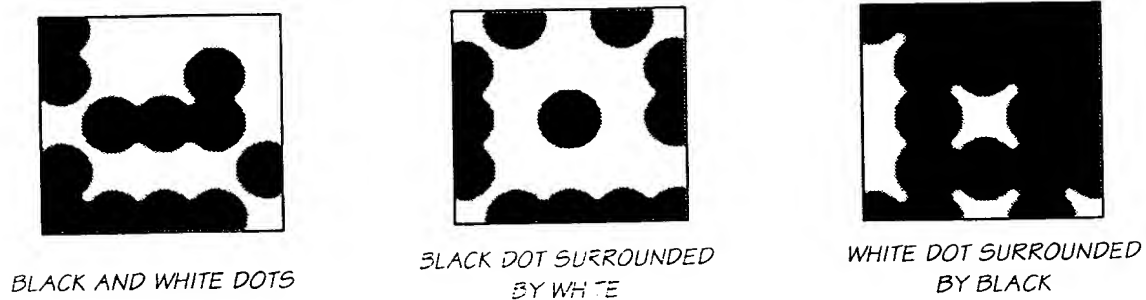


FIG. 47

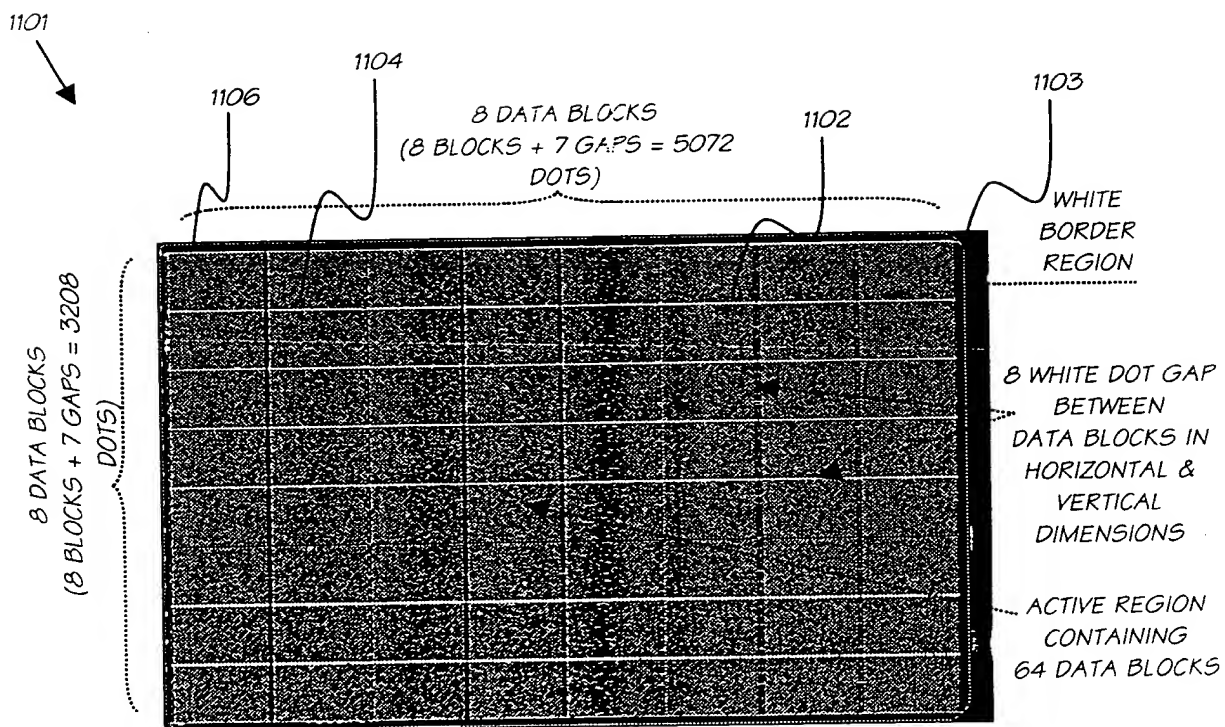


FIG. 48

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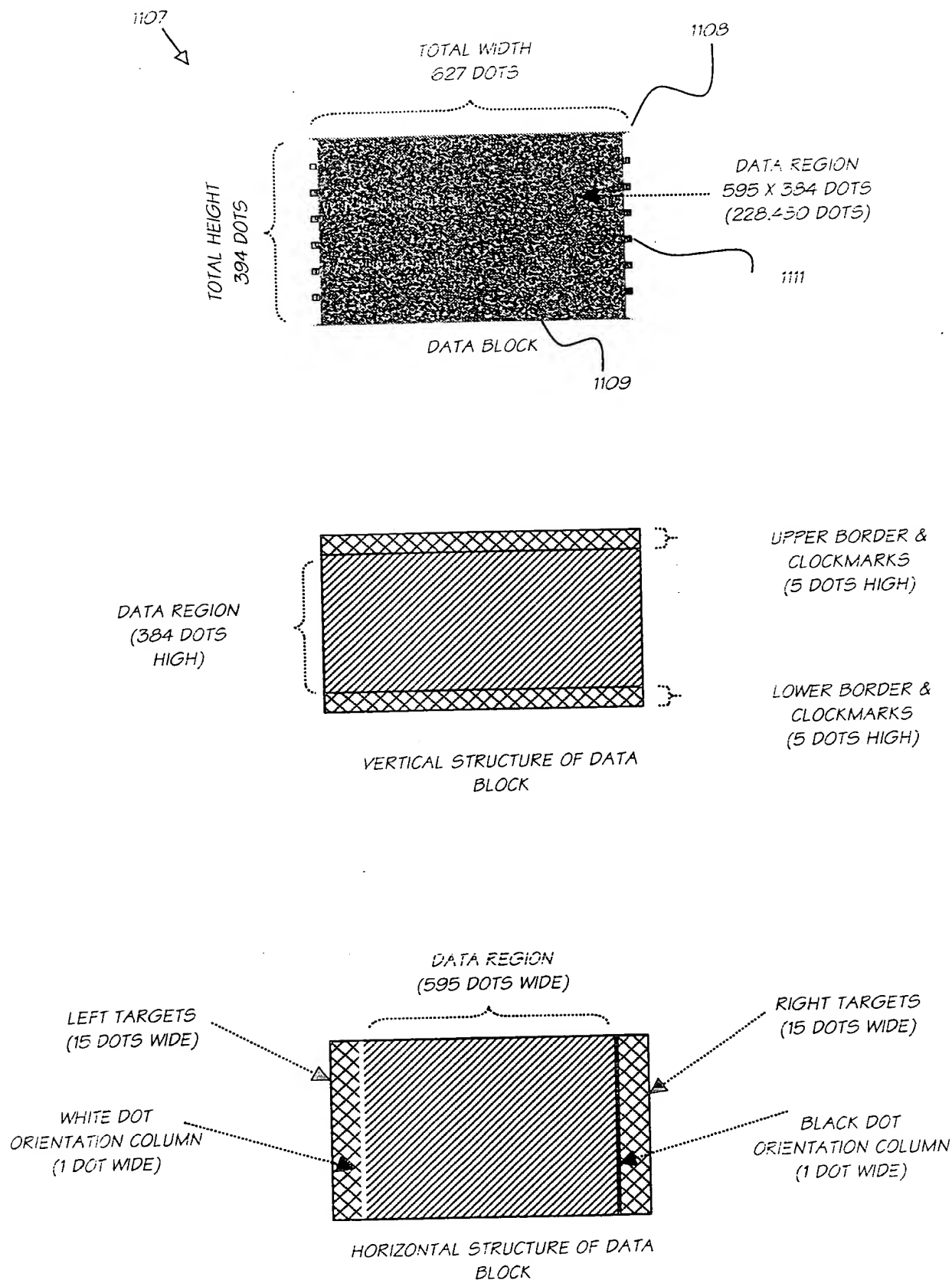


FIG. 49

09412786-071098

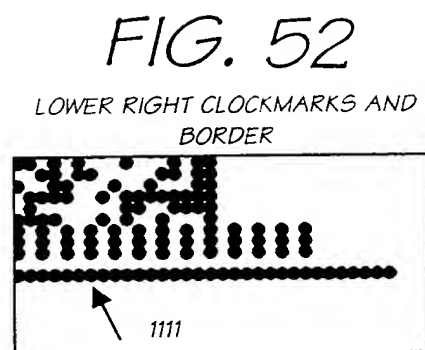
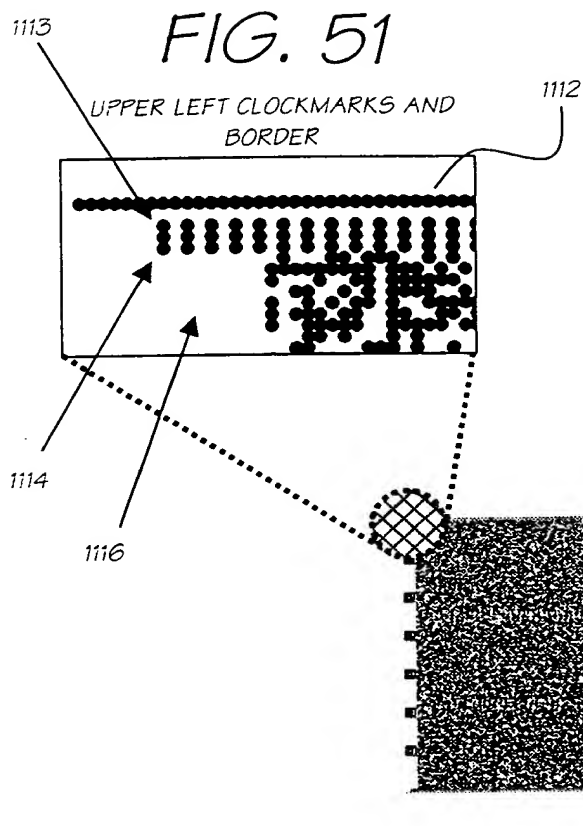


FIG. 50

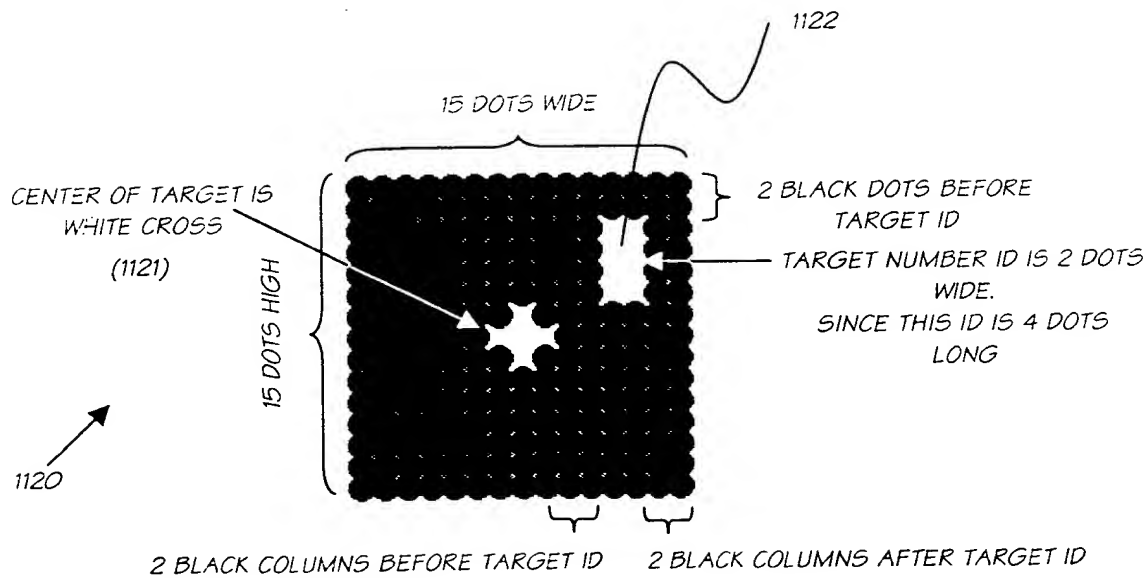


FIG. 53

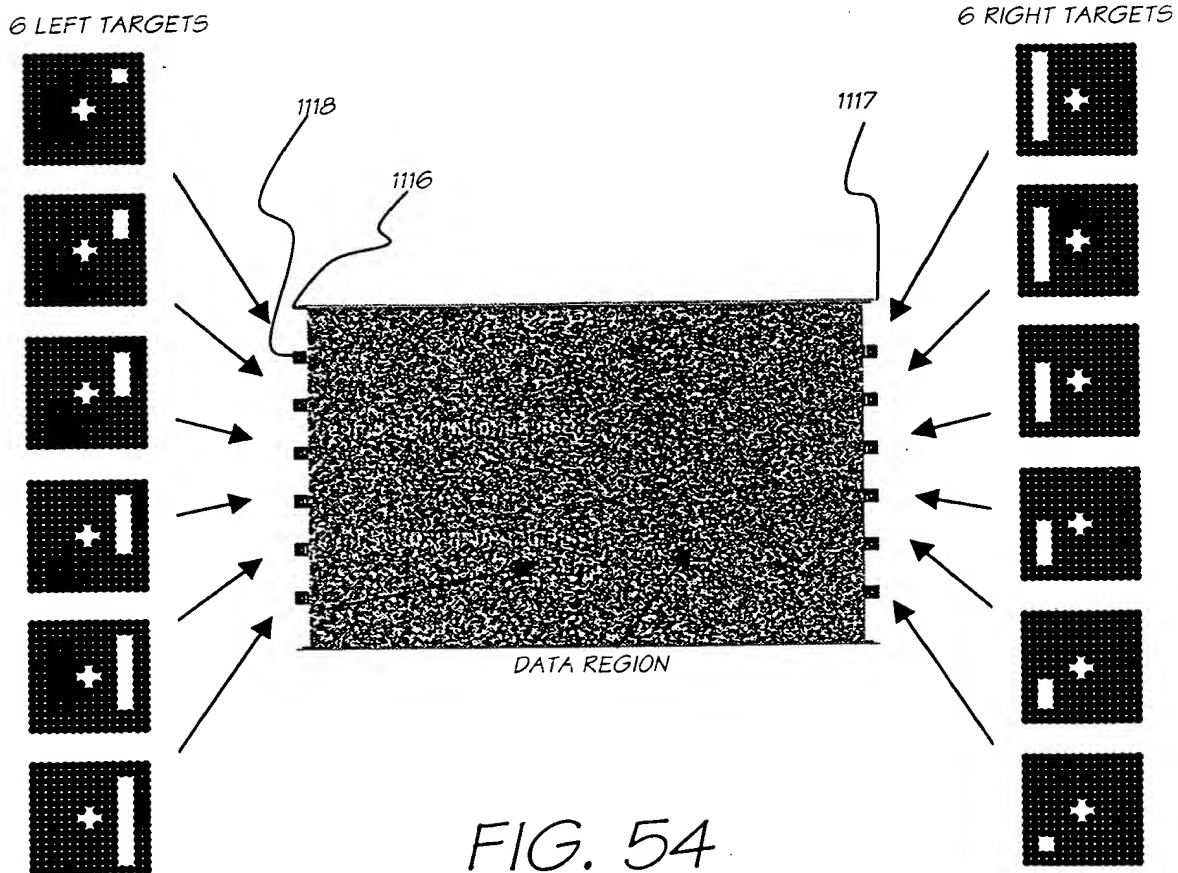


FIG. 54

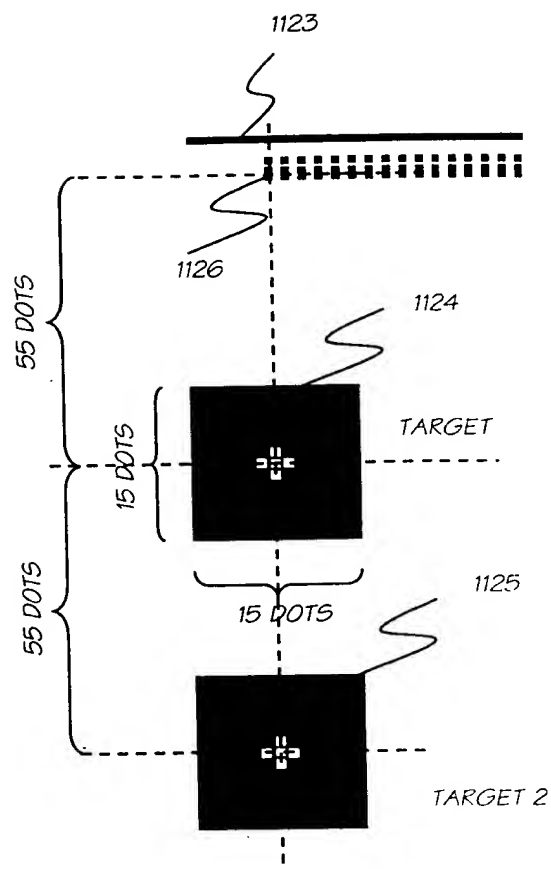


FIG. 55

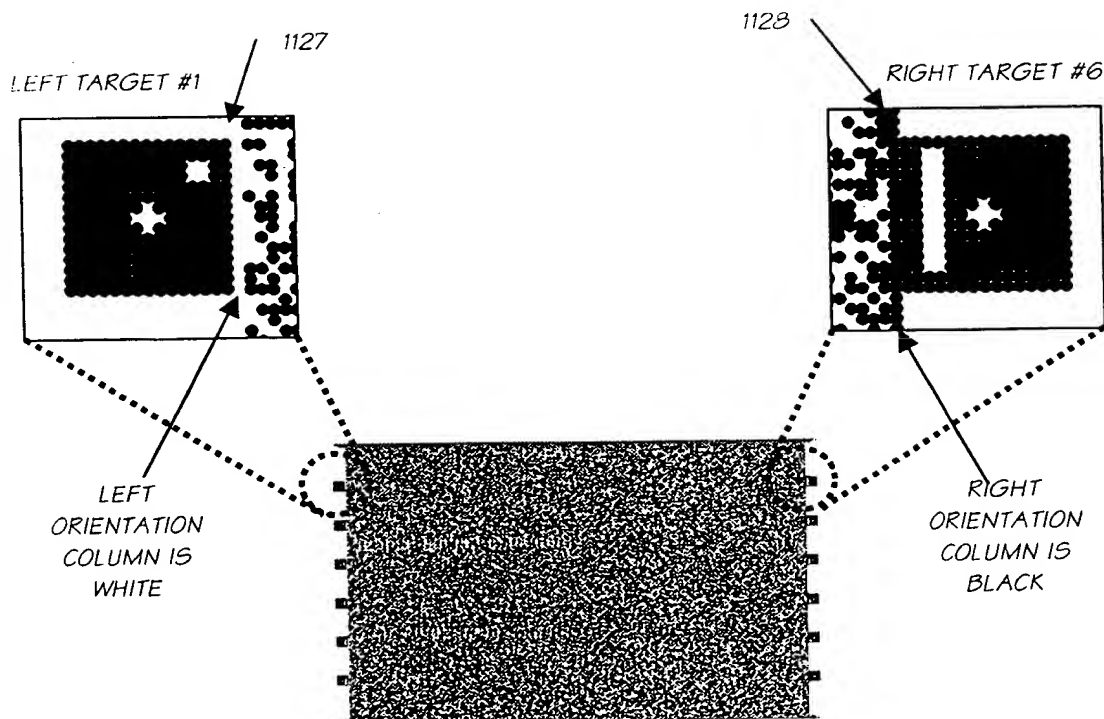


FIG. 56

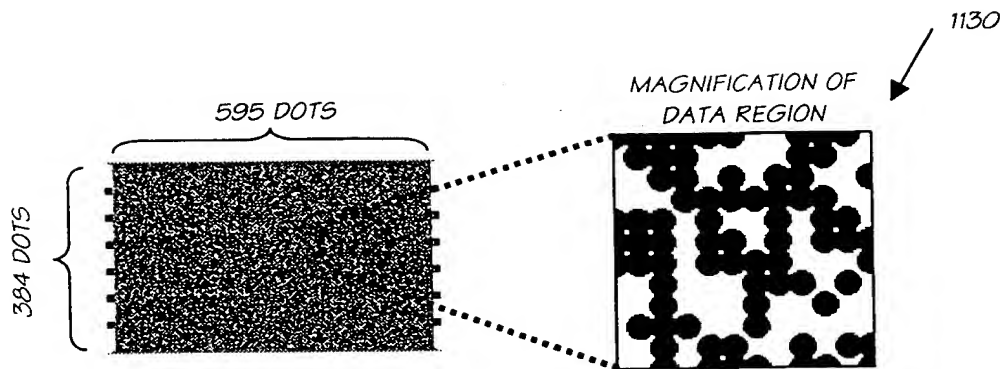


FIG. 57

00:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	} 32 COPIES OF THE 3 BYTE CONTROL INFORMATION
0C:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	
18:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	
24:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	
30:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	
3C:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	
48:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	
54:	4F 00 3D 4F 00 3D 4F 00 3D 4F 00 3D	} RESERVED BYTES ARE 0
60:	00 00 00 00 00 00 00 00 00 00 00 00	
6C:	00 00 00 00 00 00 00 00 00 00 00 00	
78:	00 00 00 00 00 00 00 00 00 00 00 00	

FIG. 59

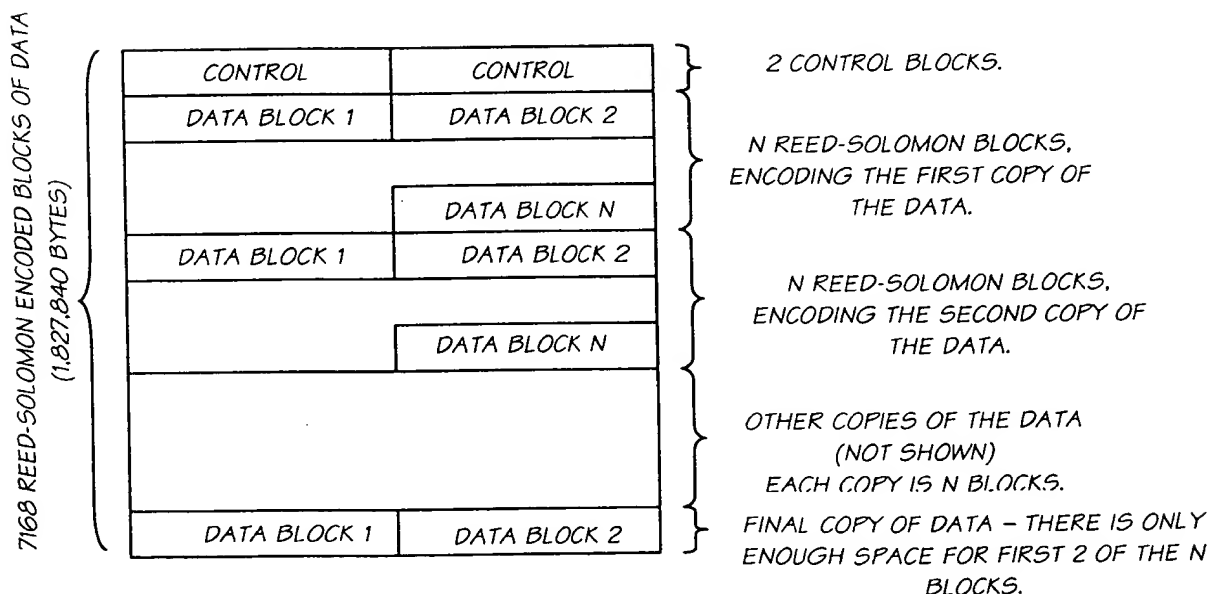


FIG. 58

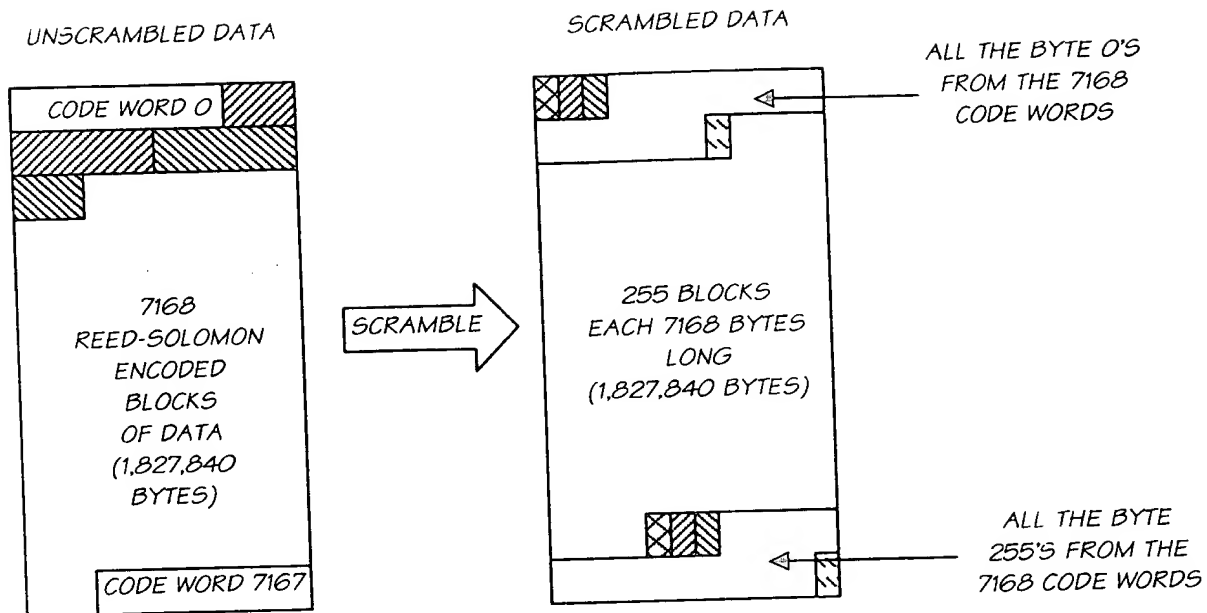


FIG. 60

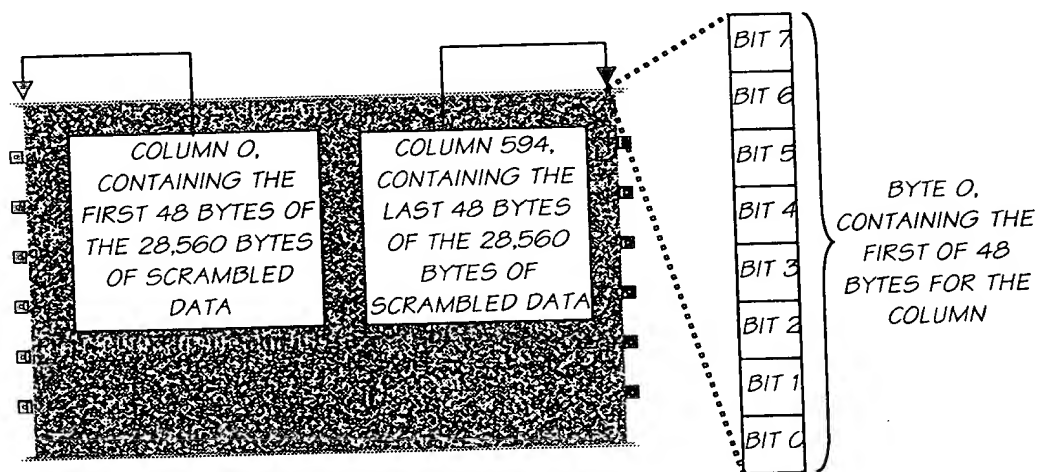


FIG. 61

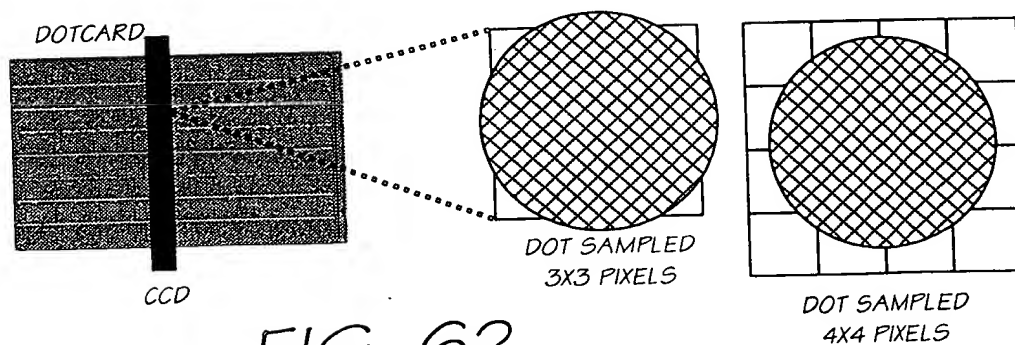


FIG. 62

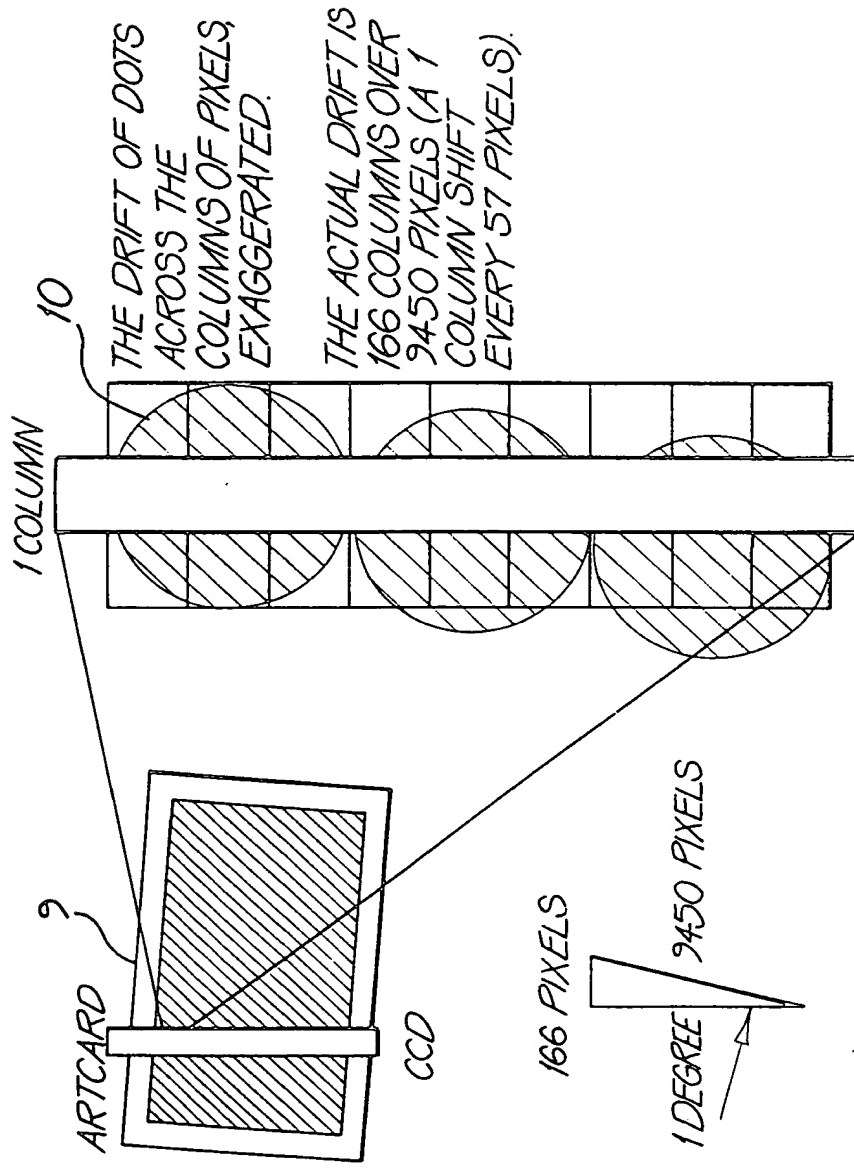


FIG. 63

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86070 9827160

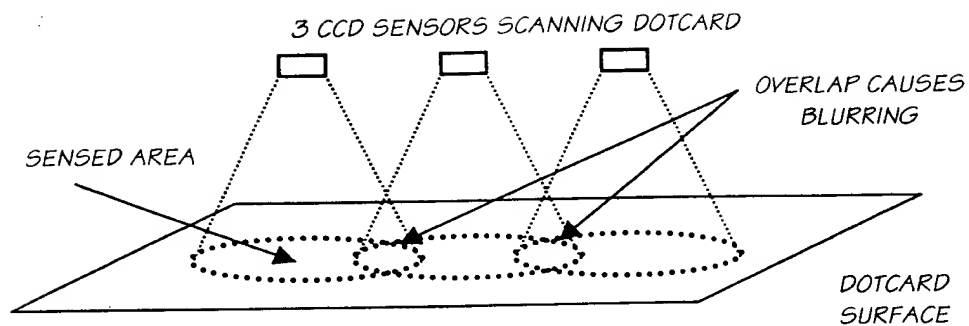


FIG. 64

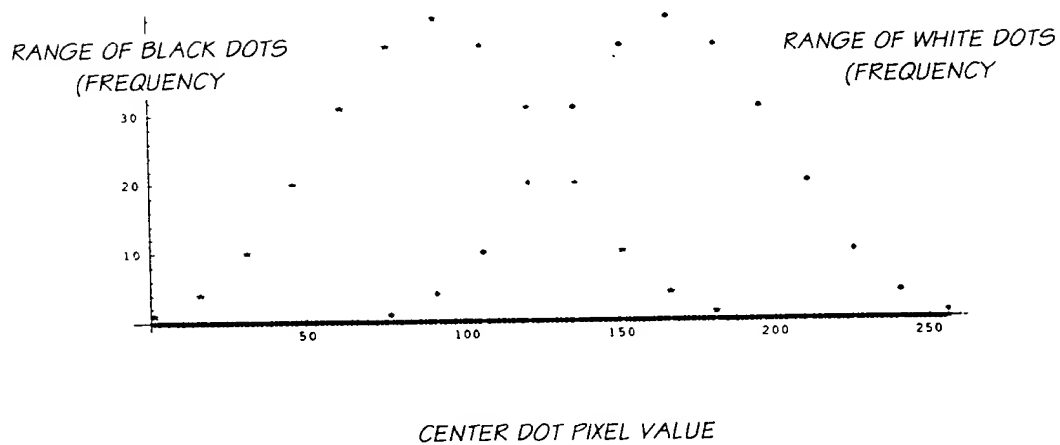
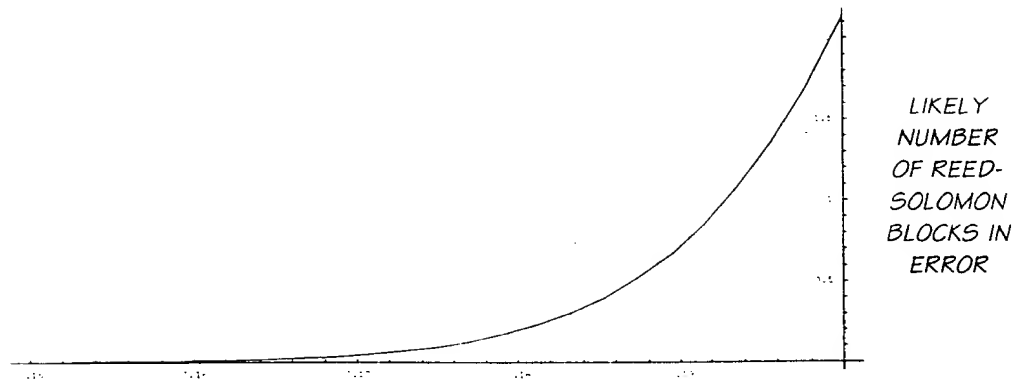
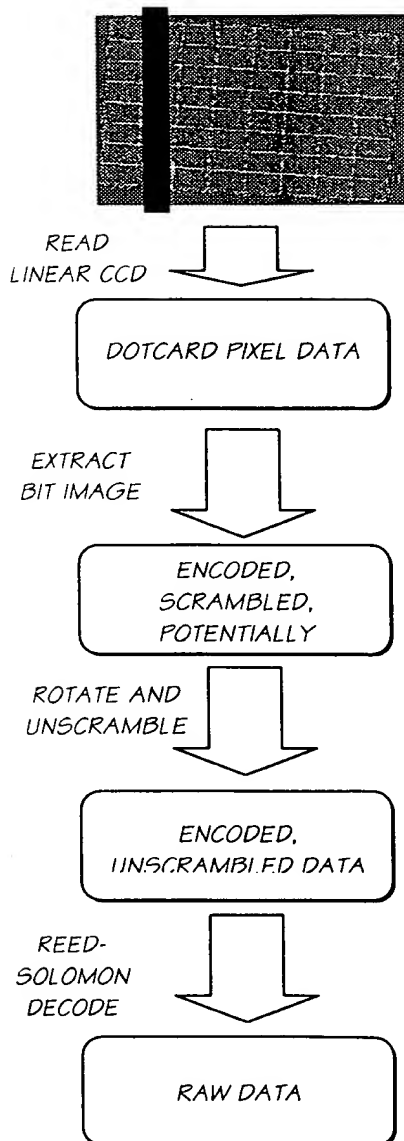


FIG. 65



PROBABILITY OF A SYMBOL BEING IN ERROR DURING A READ

FIG. 66



APPROXIMATE DATA SIZES FOR 1600 DPI DOTCARD

86MM + 1MM IN HORIZONTAL DIMENSION FOR P ROTATION = 87MM

87MM = 16,252 SCANLINES

16,440 SCANLINES @ 11,000 PIXELS PER SCANLINE =

180,840,000 PIXELS

180,840,000 PIXELS @ 1 BYTE PER PIXEL = 180,840,000 BYTES
= 172.5 MB

64 DATA BLOCKS, EACH CONTAINING 597 COLUMNS (595 DATA REGION COLUMNS AND 2 ORIENTATION COLUMNS), @ 48 BYTES PER COLUMN = 28,656 BYTES PER DATA BLOCK FOR A TOTAL OF 1,833,984 BYTES.

64 DATA BLOCKS, EACH CONTAINING 112 ENCODED REED SOLOMON BLOCKS, @ 255 BYTES PER REED SOLOMON BLOCK FOR A TOTAL OF 1,827,840 BYTES.

DECODED DATA, WITH A MAXIMUM SIZE OF 910,082 BYTES.
(64 X 112 X 127 - (2 CONTROL BLOCKS @ 127 BYTES))

FIG. 67

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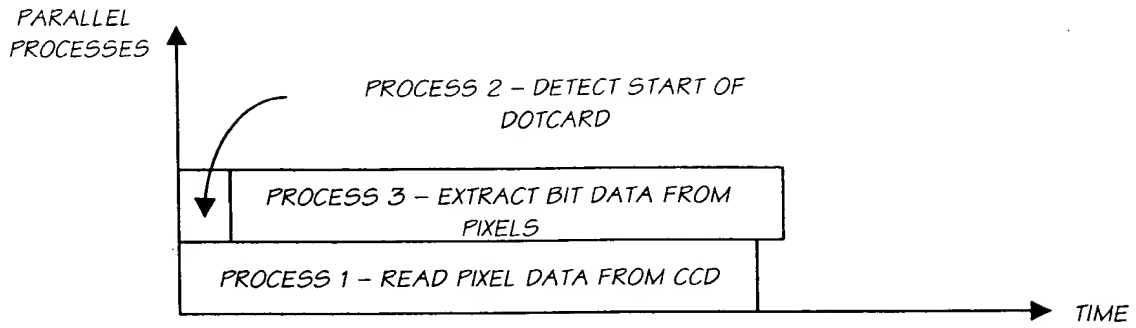


FIG. 68

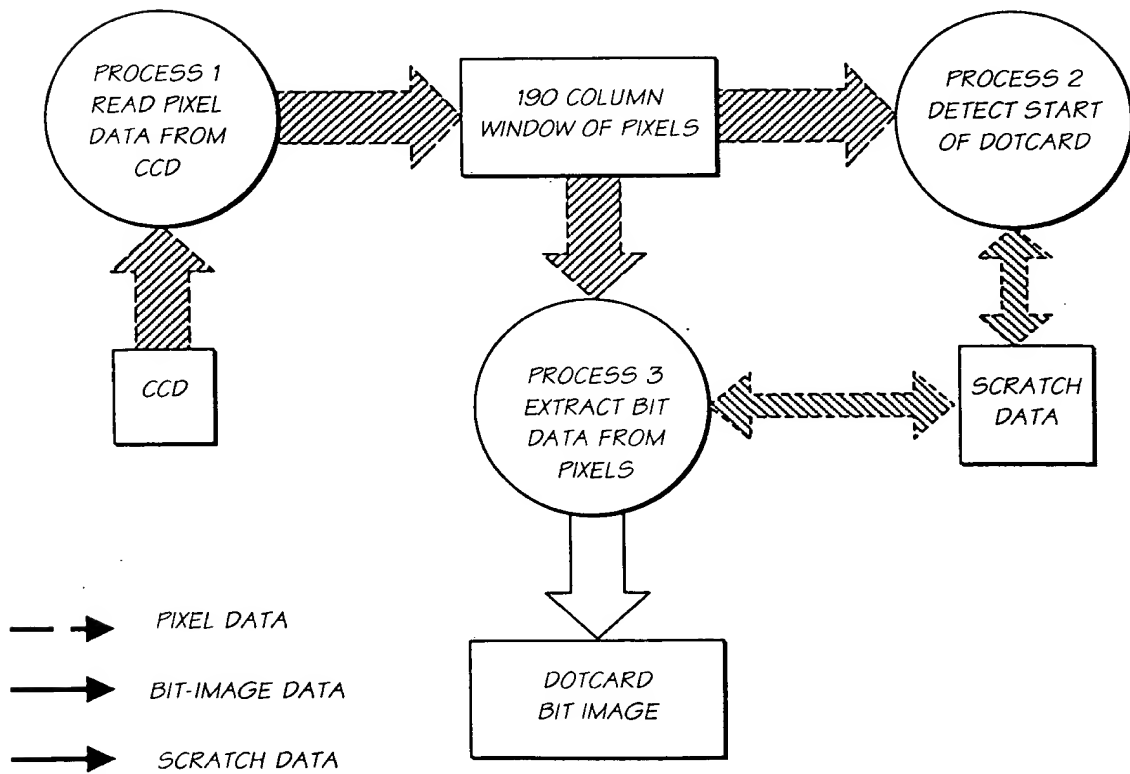


FIG. 69

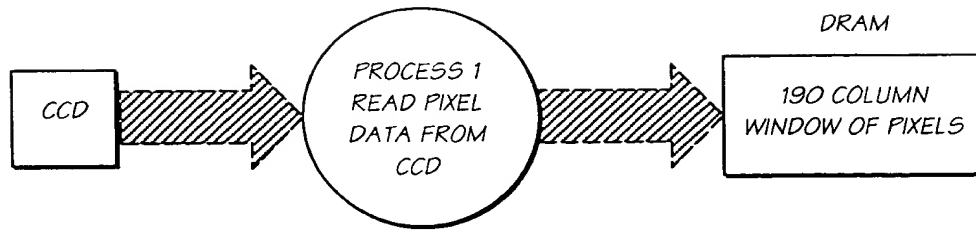


FIG. 70

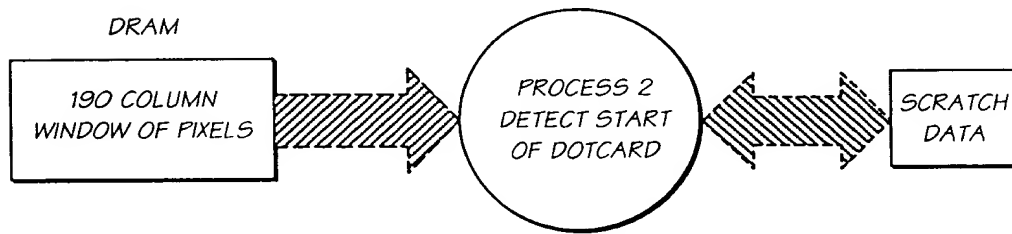


FIG. 71

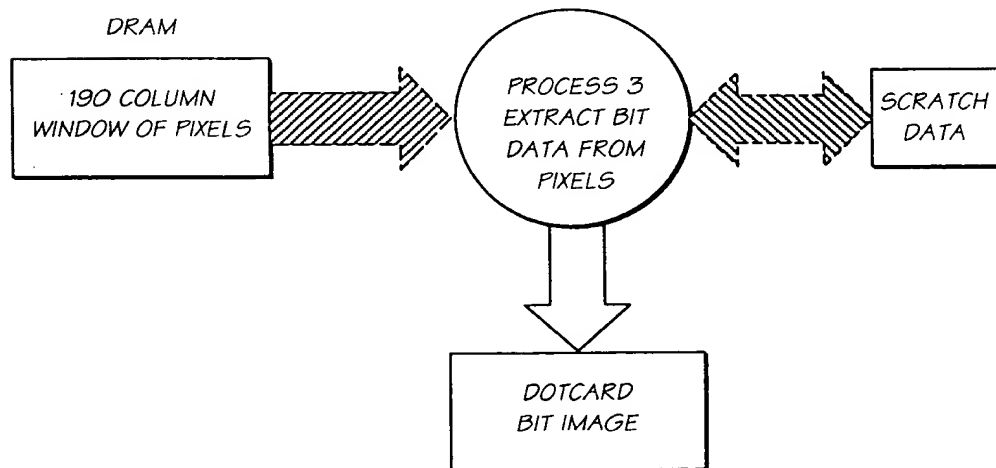


FIG. 72

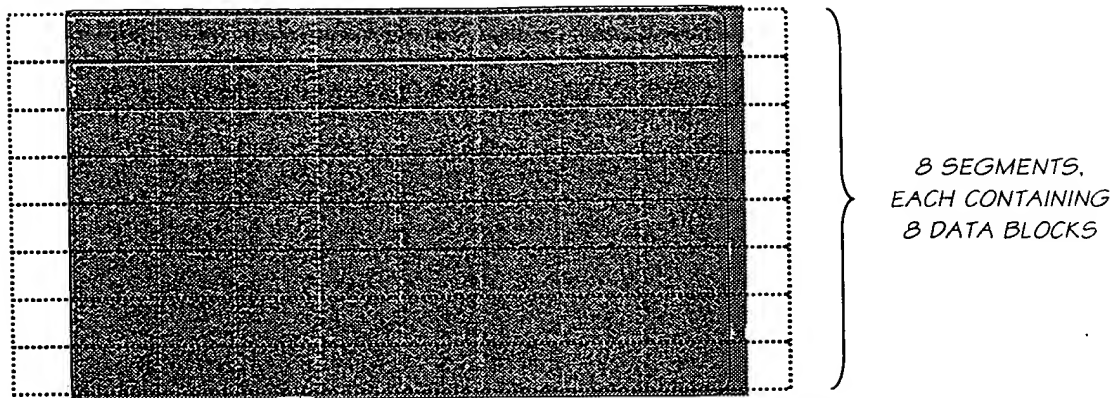


FIG. 73

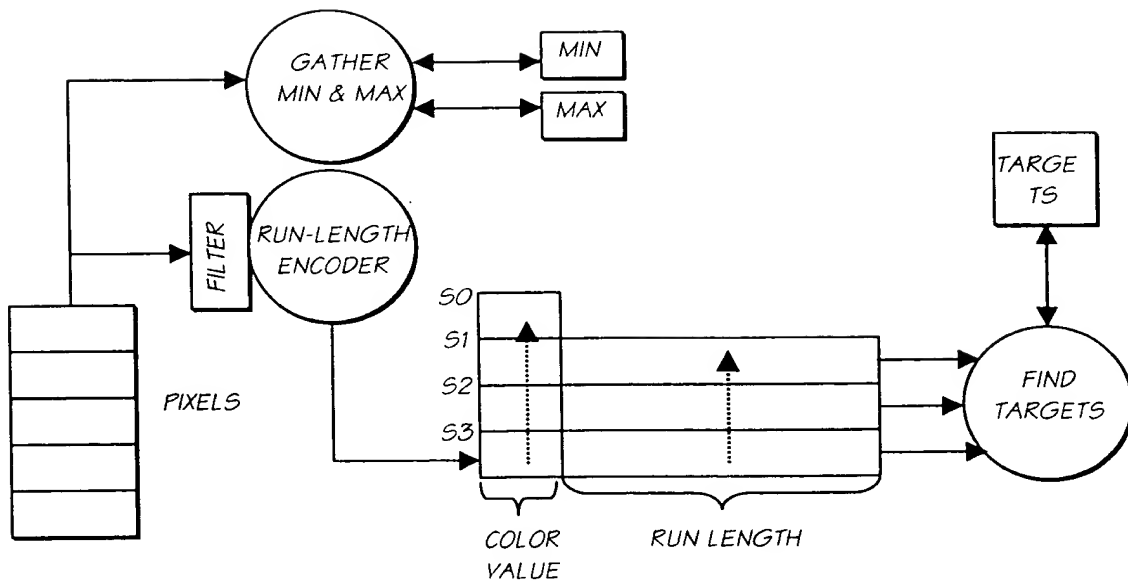


FIG. 74

LOCATED TARGETS

0
NULL
...
NULL

POSSIBLE TARGETS

0
NULL
...
NULL

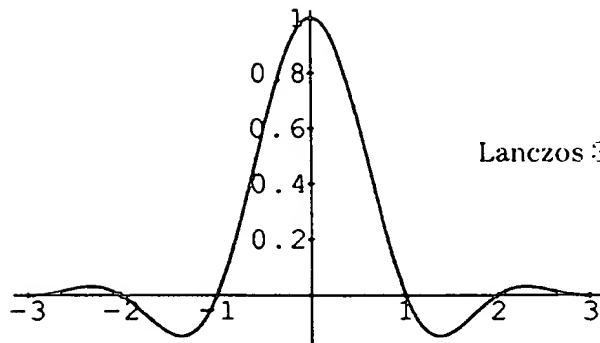
AVAILABLE TARGETS

28
...
TARGET 27

TARGET
STRUCTURES



FIG. 75



$$\text{Lanczos } 3(x) = \begin{cases} \frac{\sin(\pi x)}{\pi x} \frac{\sin\left(\frac{\pi}{3}\right)}{\frac{x}{\pi/3}}, & |x| < 3 \\ 0, & |x| \geq 3 \end{cases}$$

FIG. 76

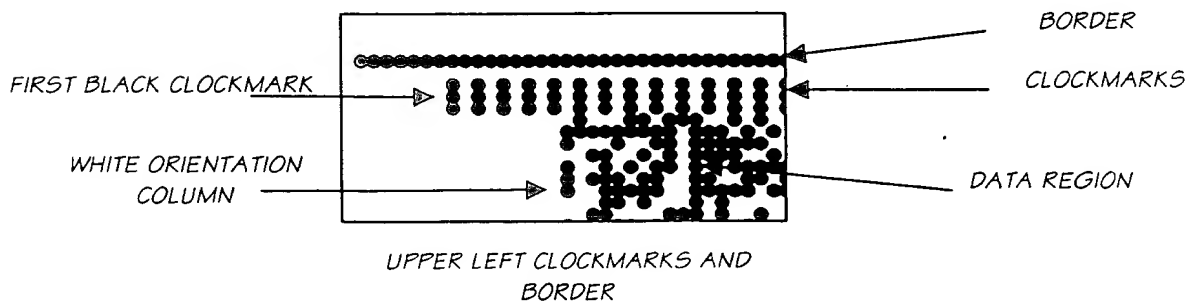


FIG. 77

09442786-074098

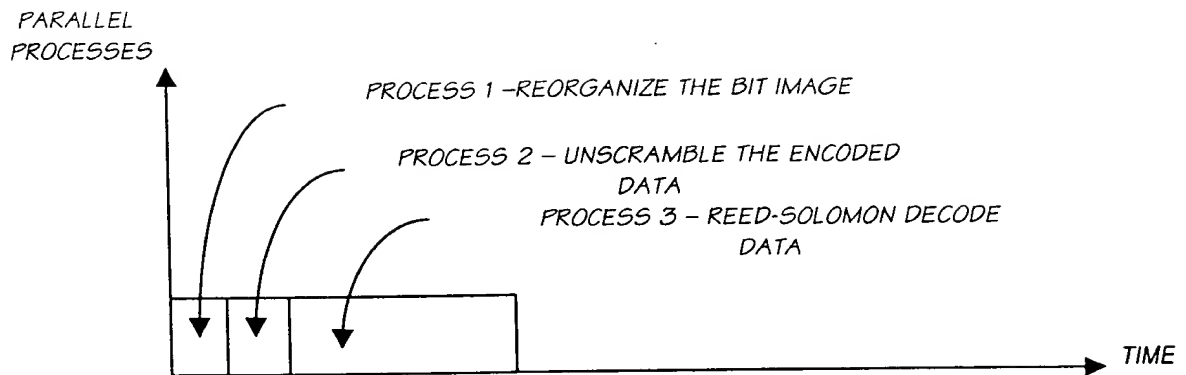


FIG. 78

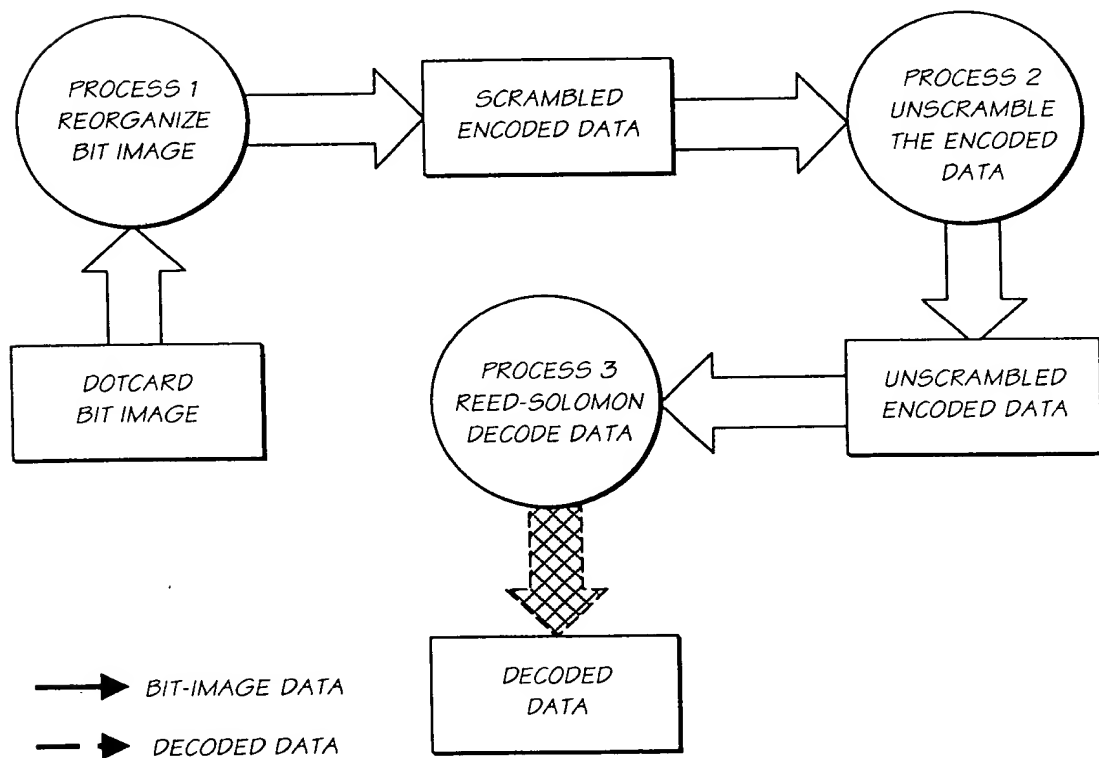


FIG. 79

09412786-074096

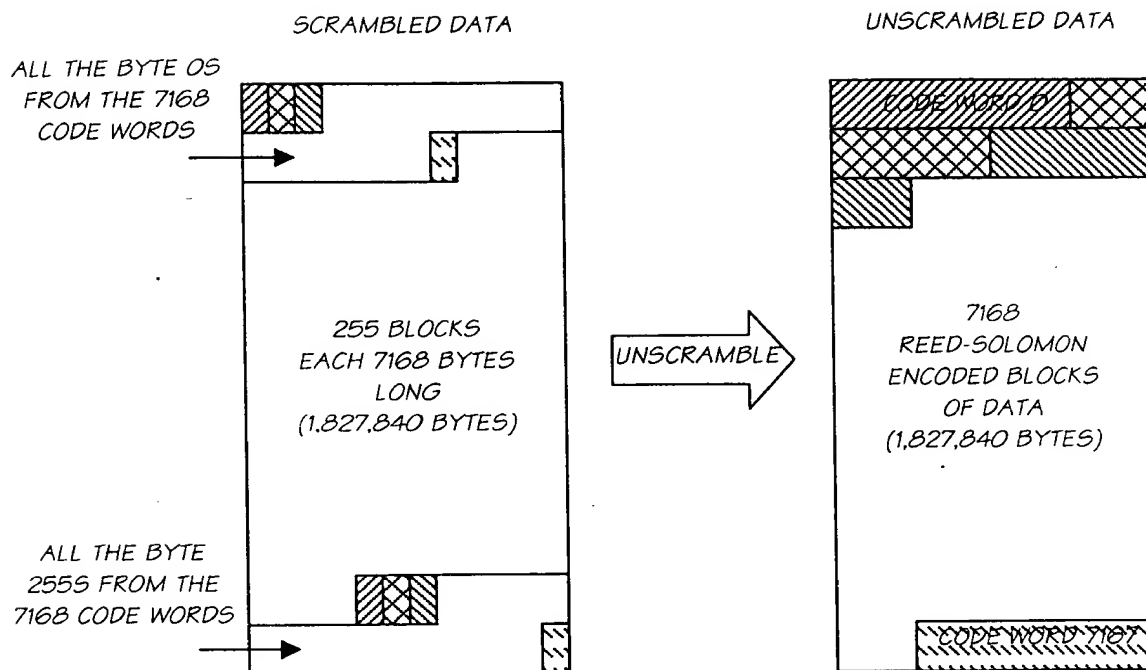


FIG. 80

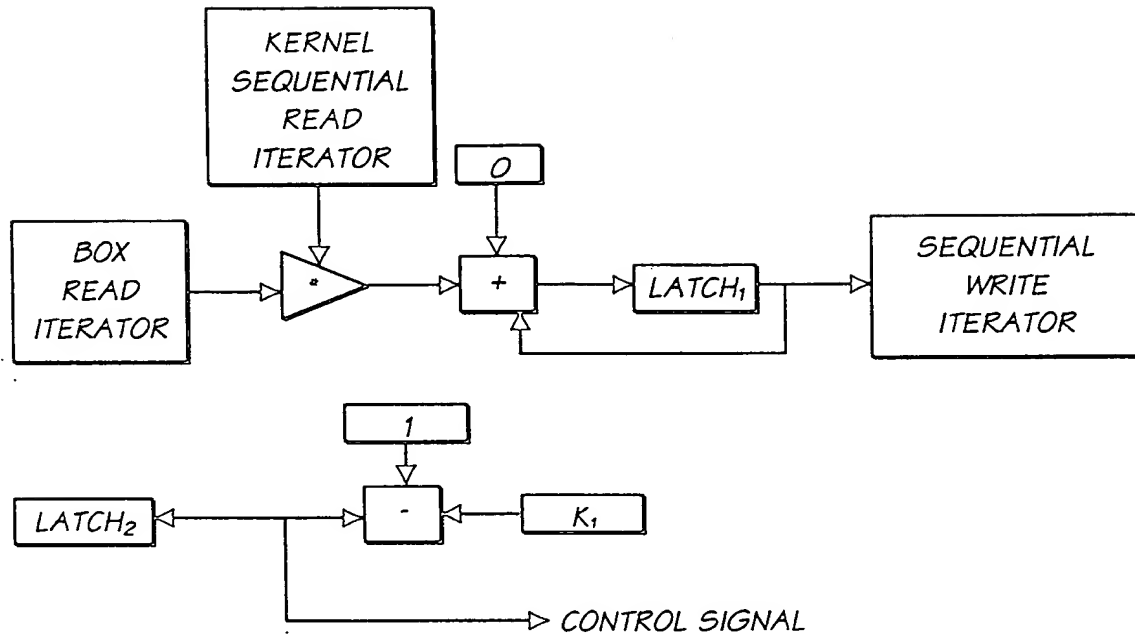


FIG. 81

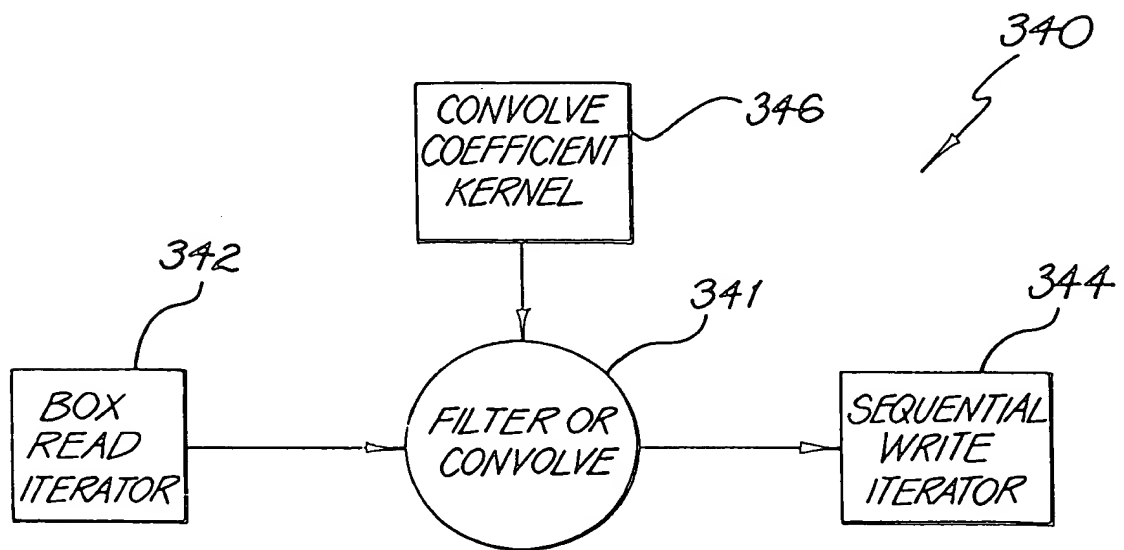


FIG. 82

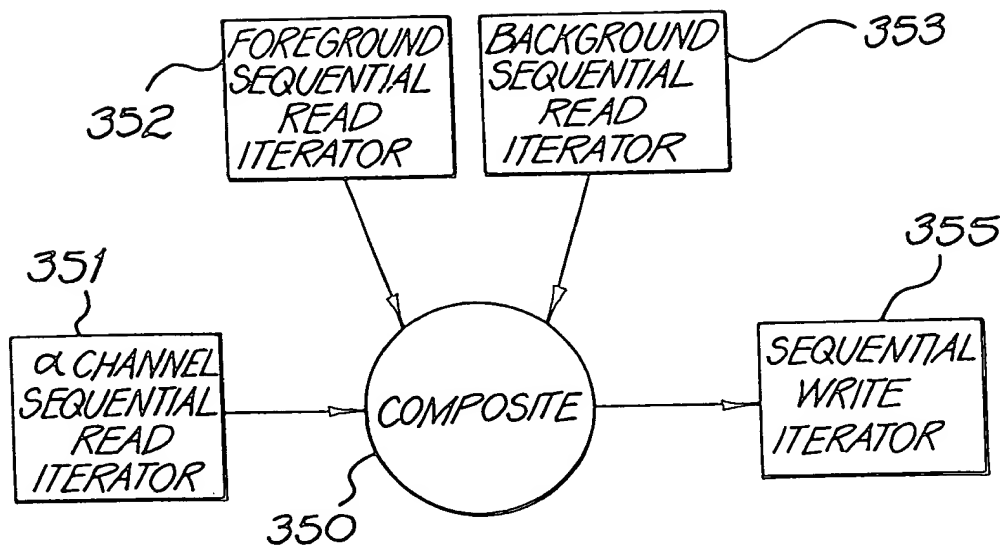


FIG. 83

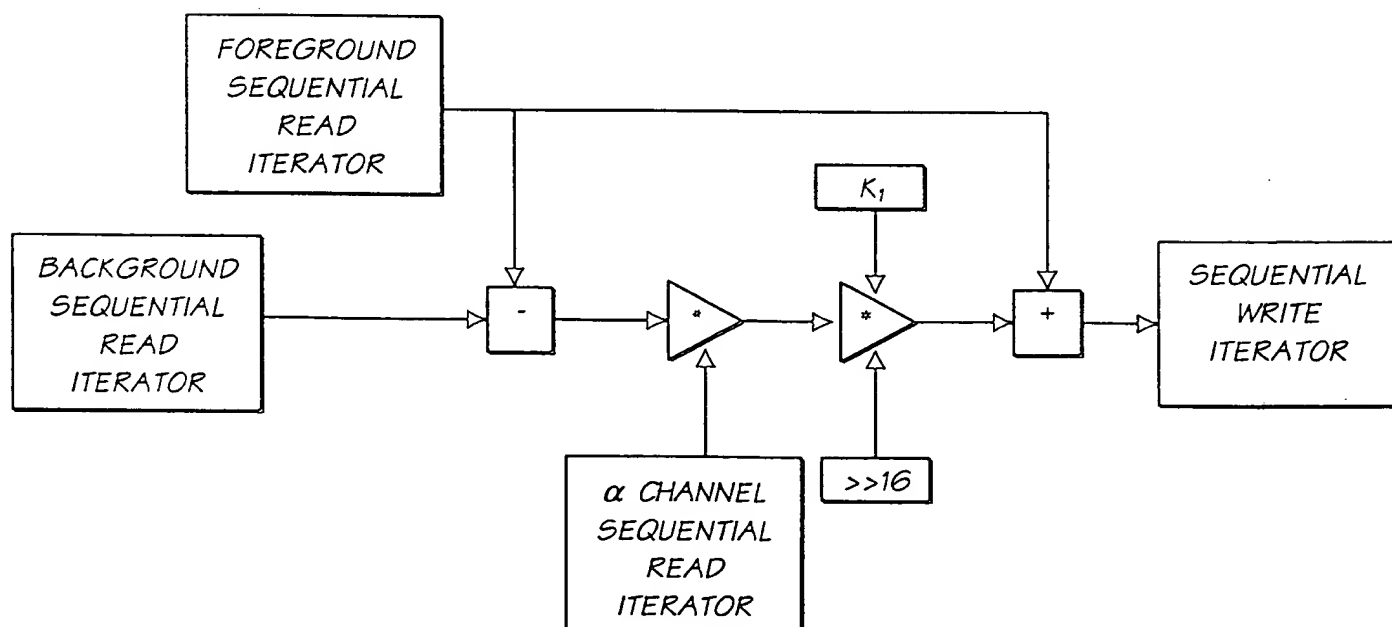


FIG. 84

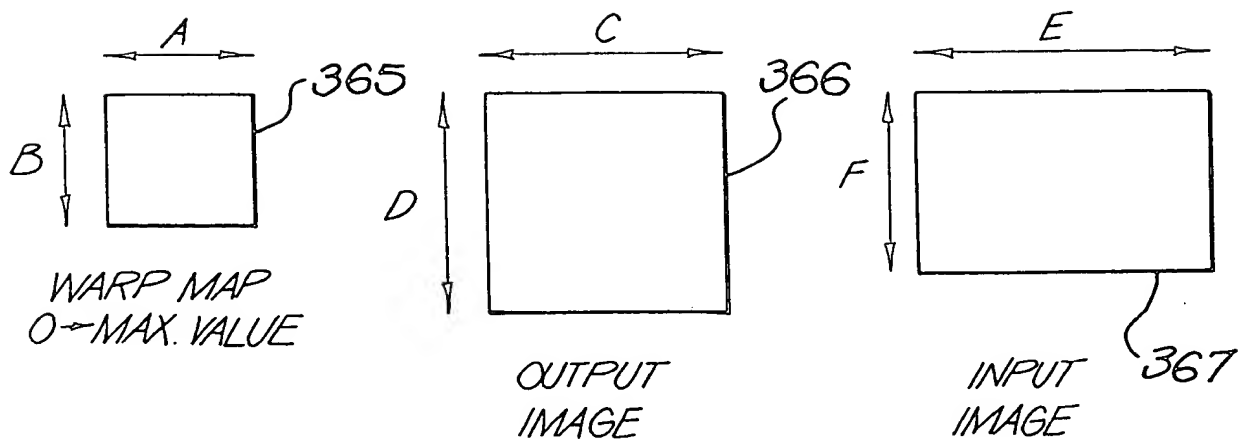


FIG. 85

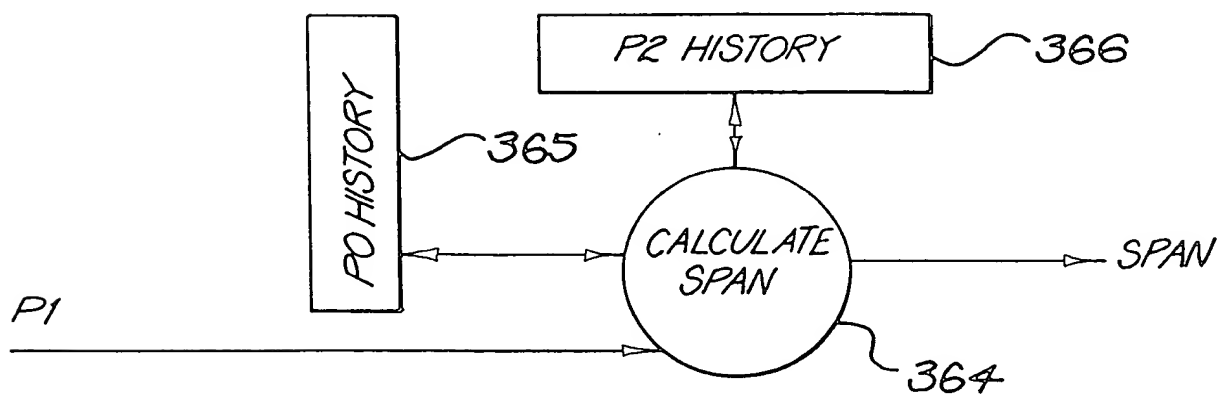


FIG. 86

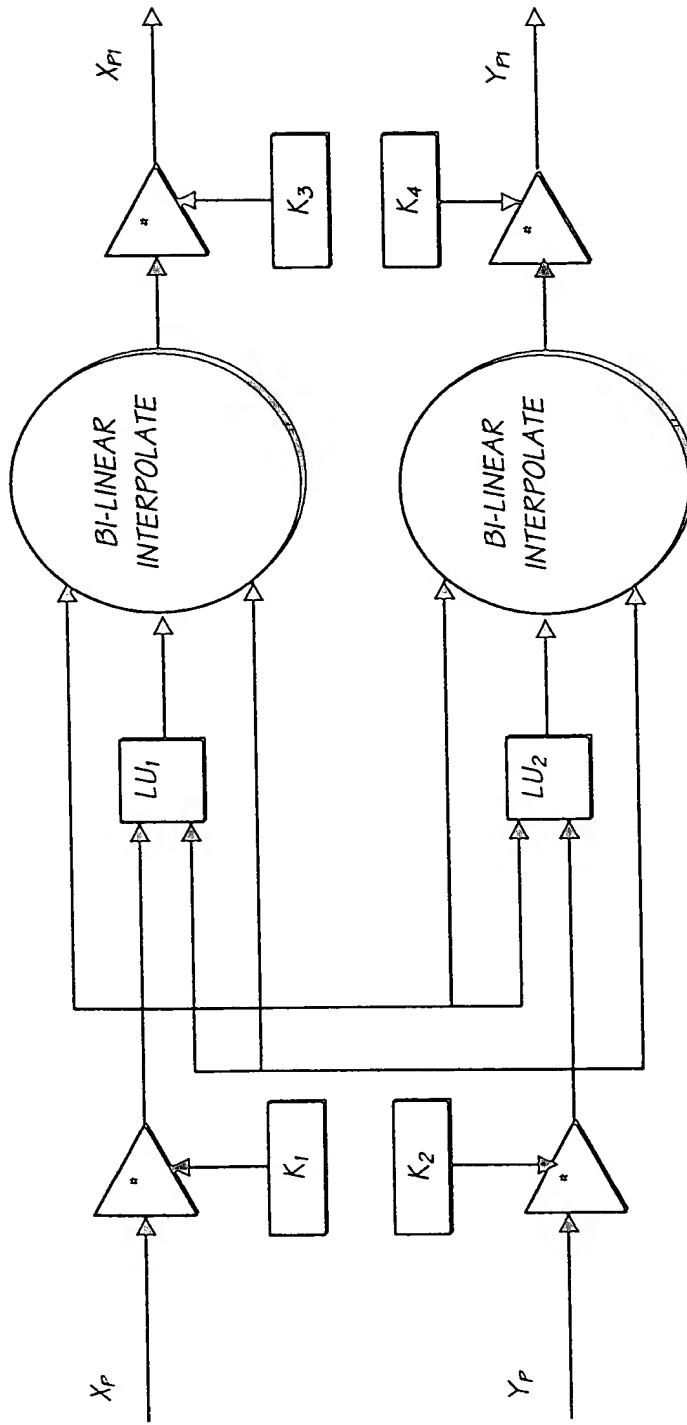


FIG. 87

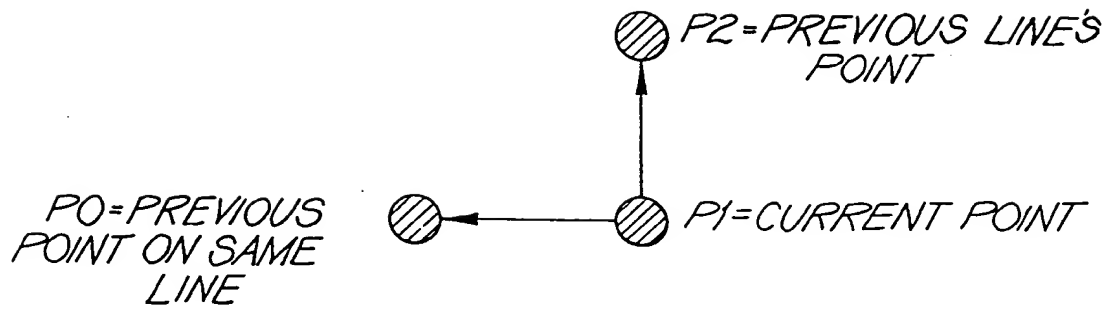


FIG. 88

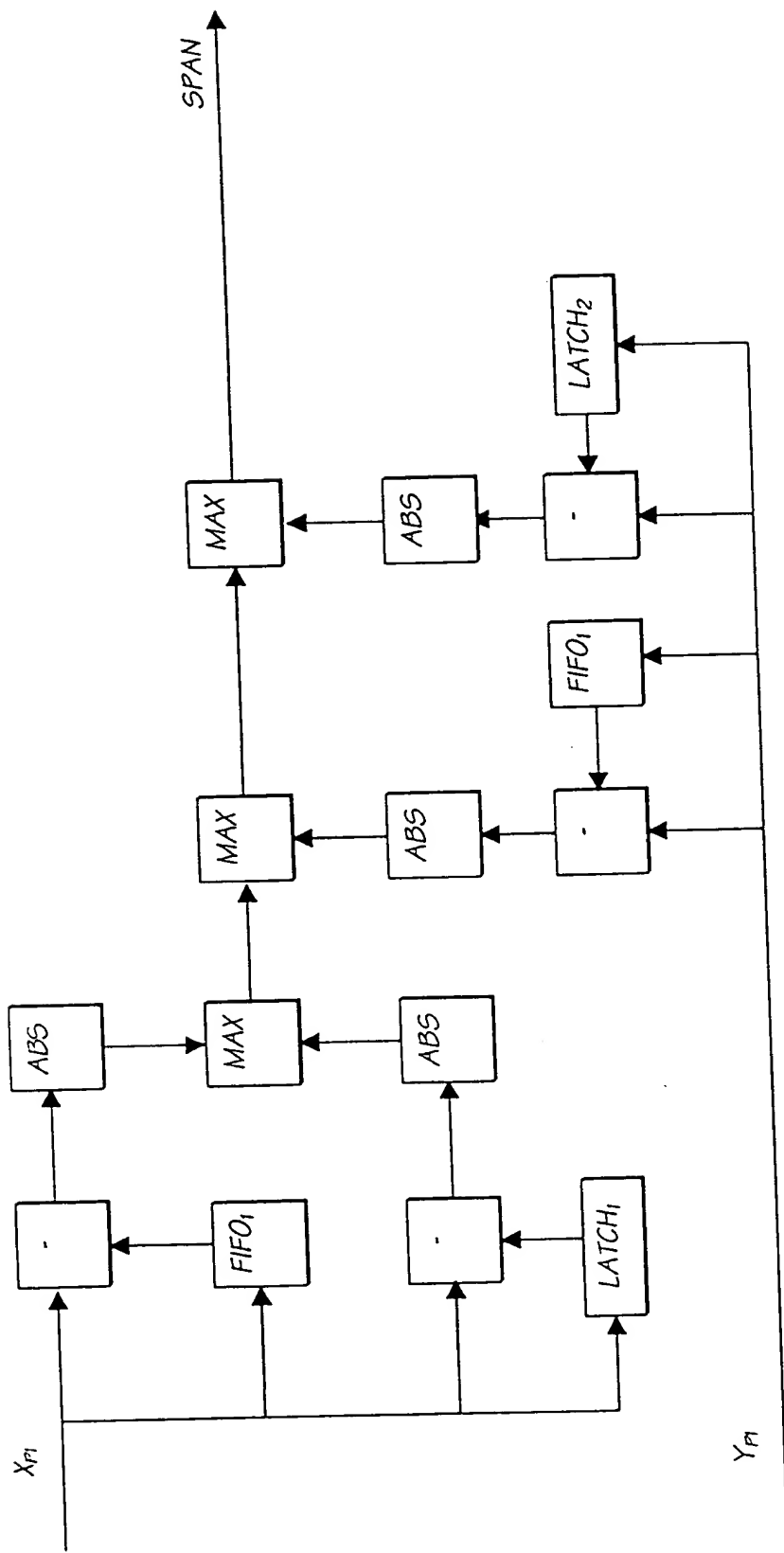


FIG. 89

POINT (x,y) ON LEVEL B
OF PYRAMID

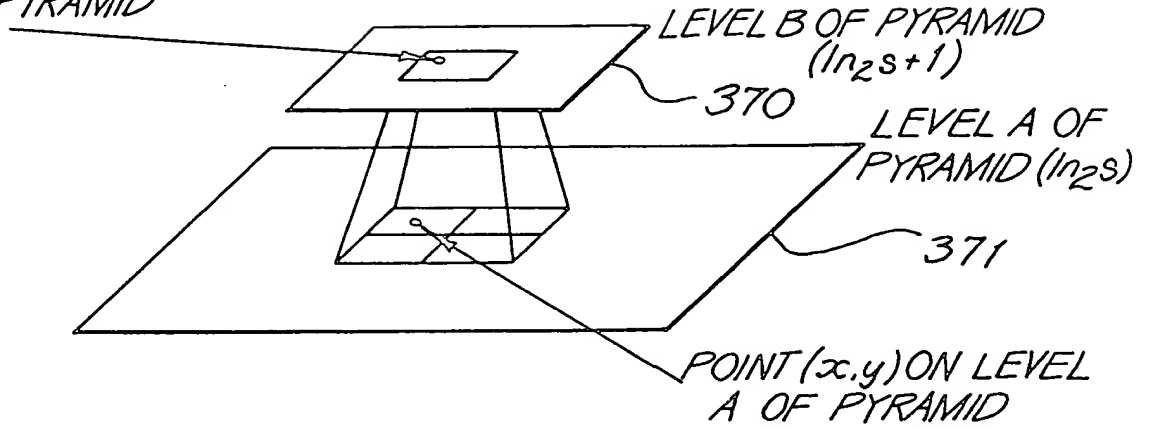


FIG. 90

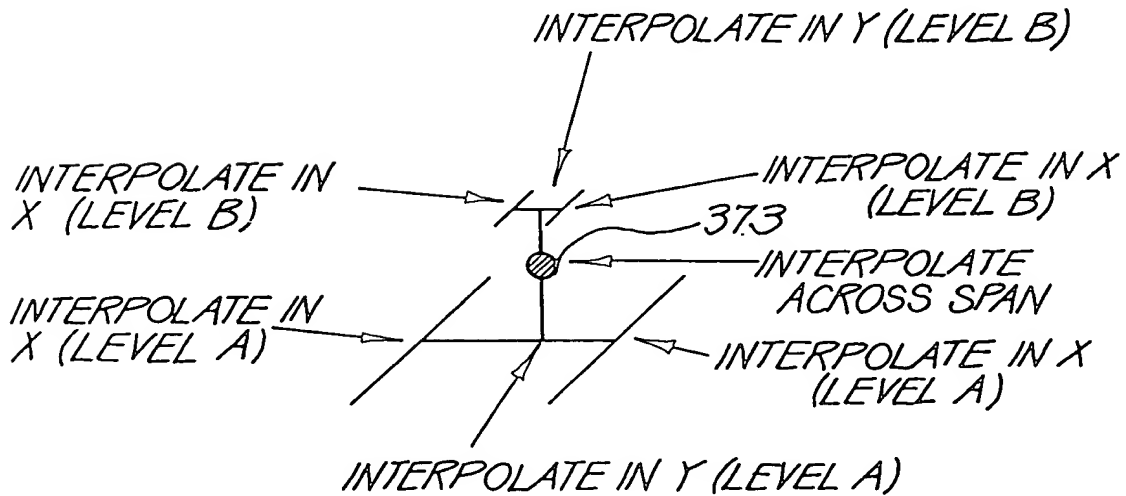


FIG. 91

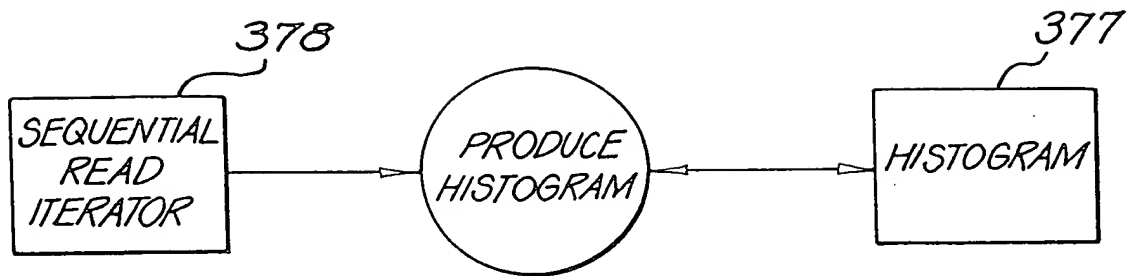


FIG. 92

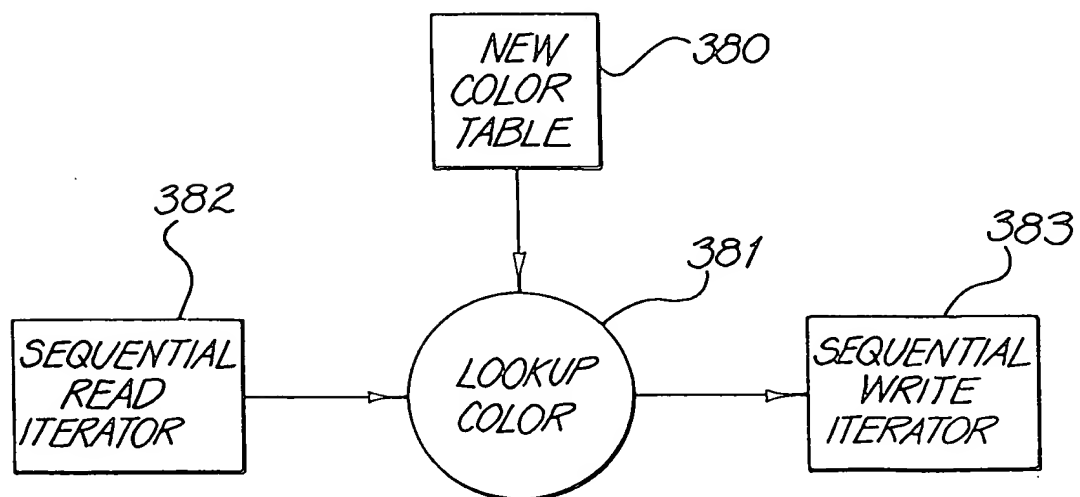
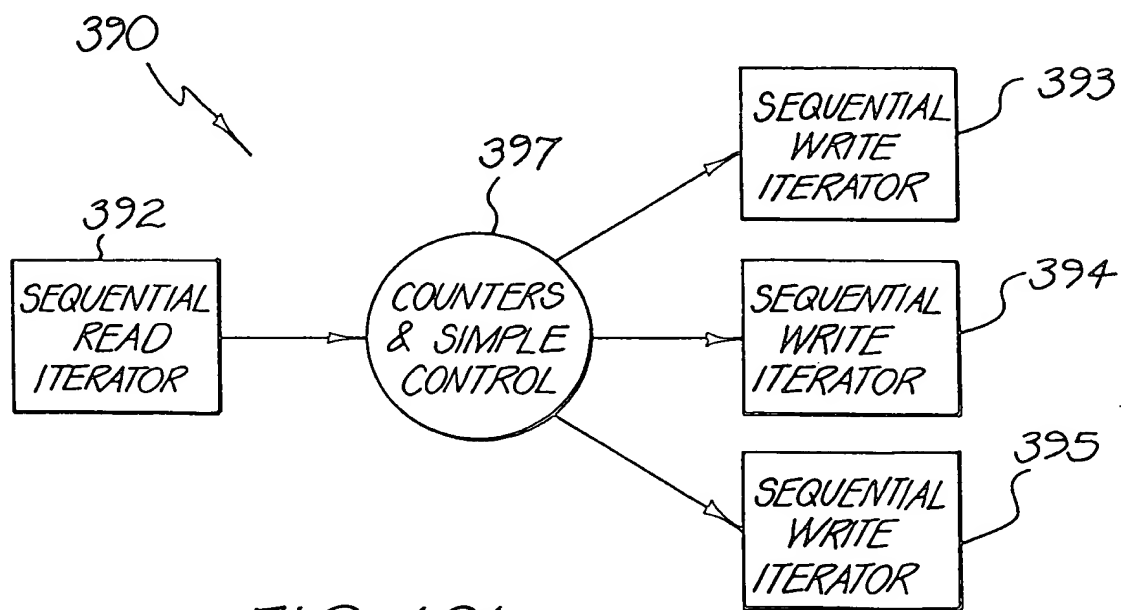
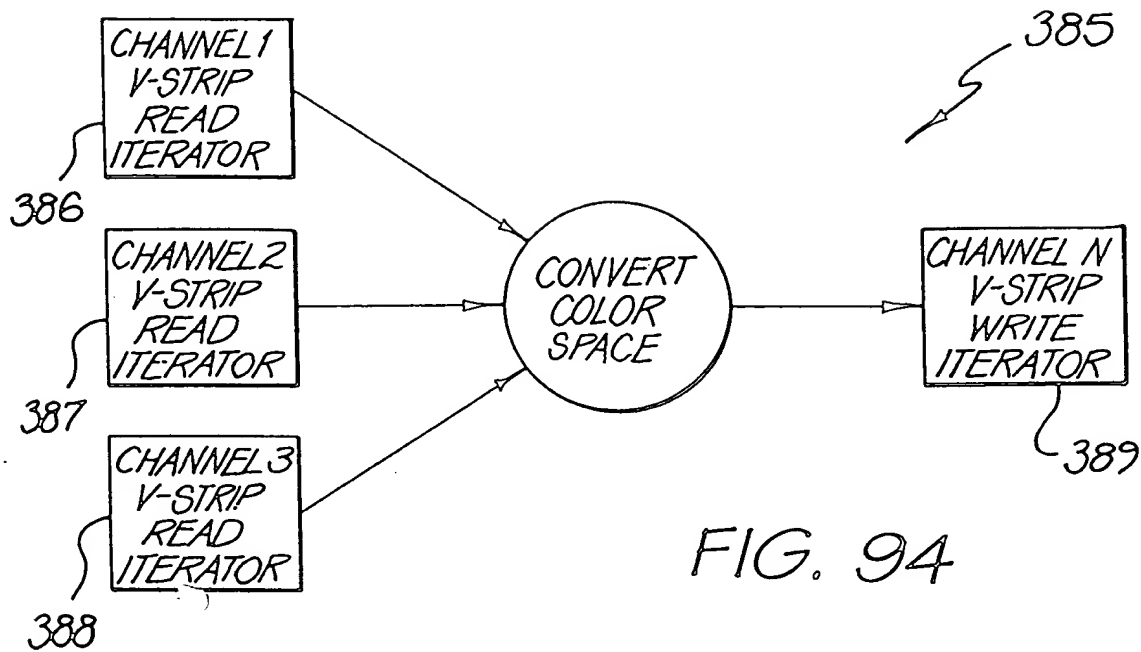


FIG. 93



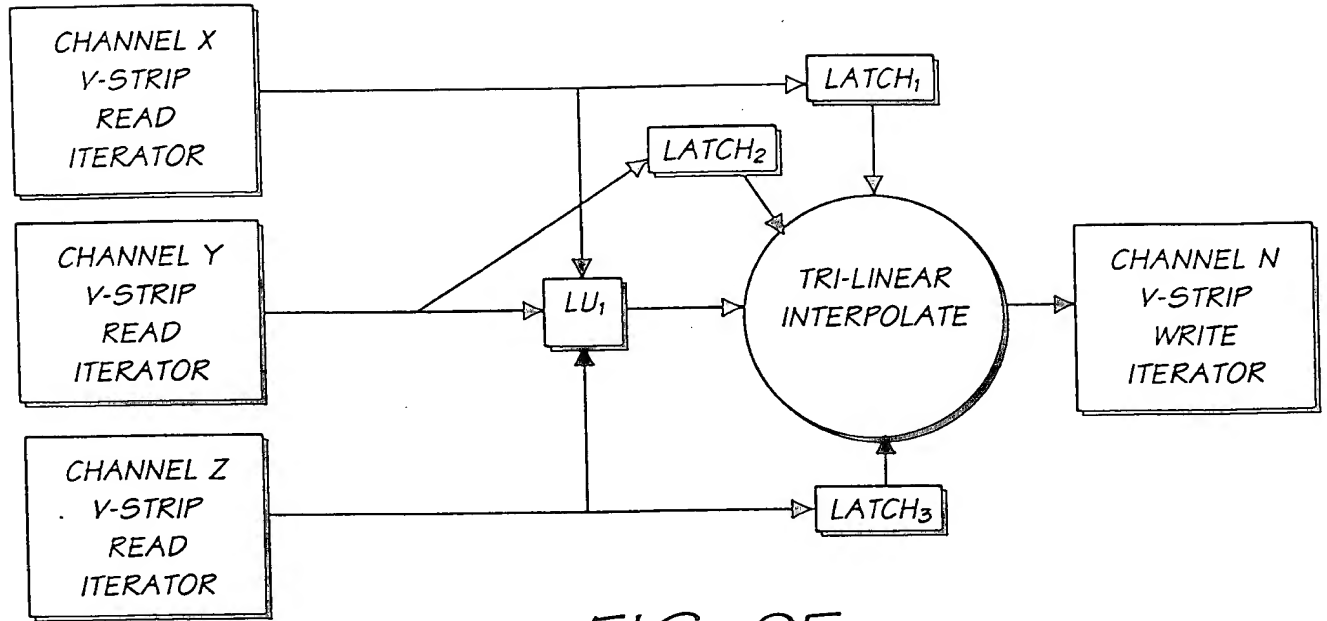


FIG. 95

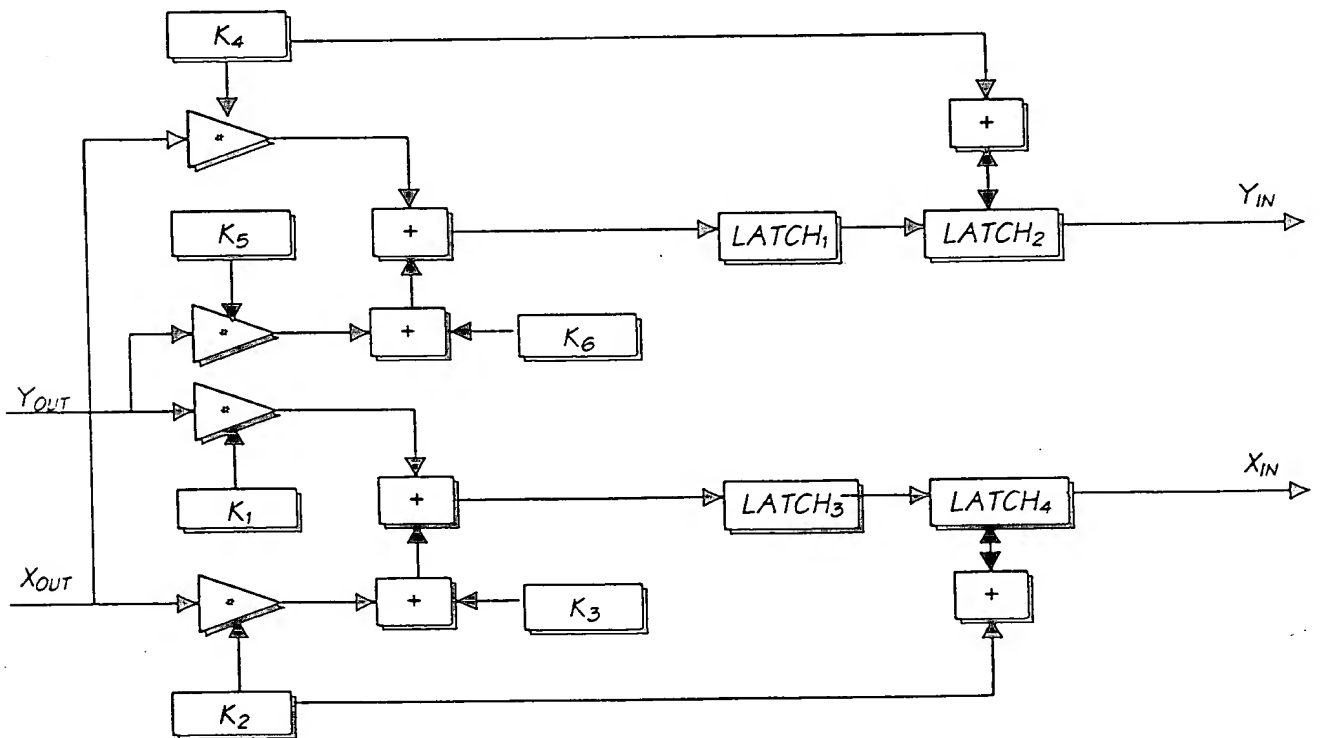


FIG. 96

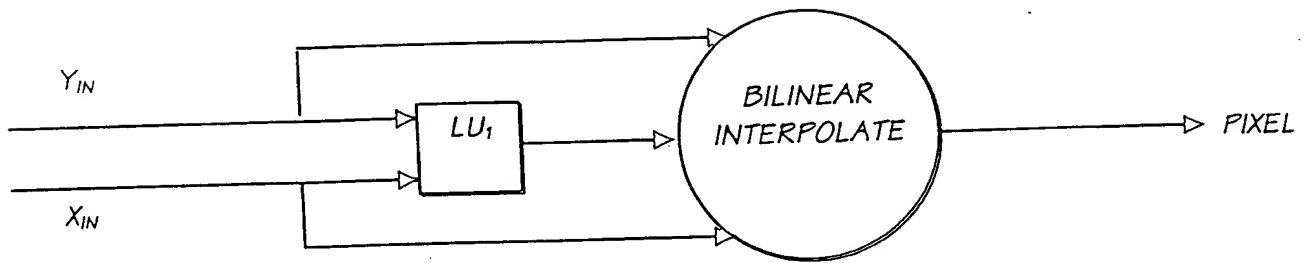


FIG. 97

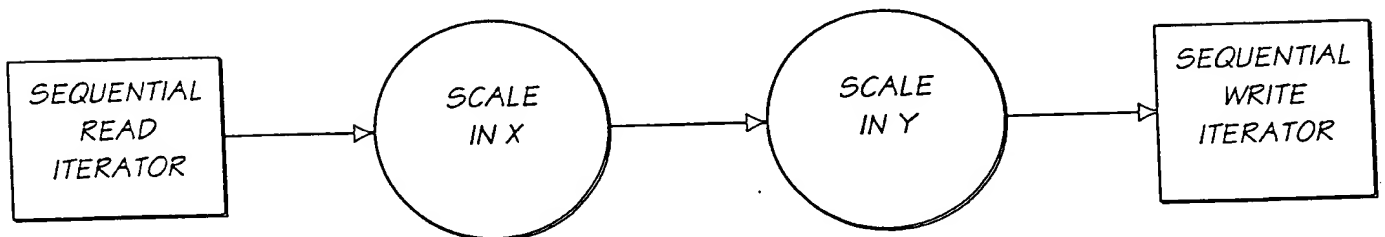


FIG. 98

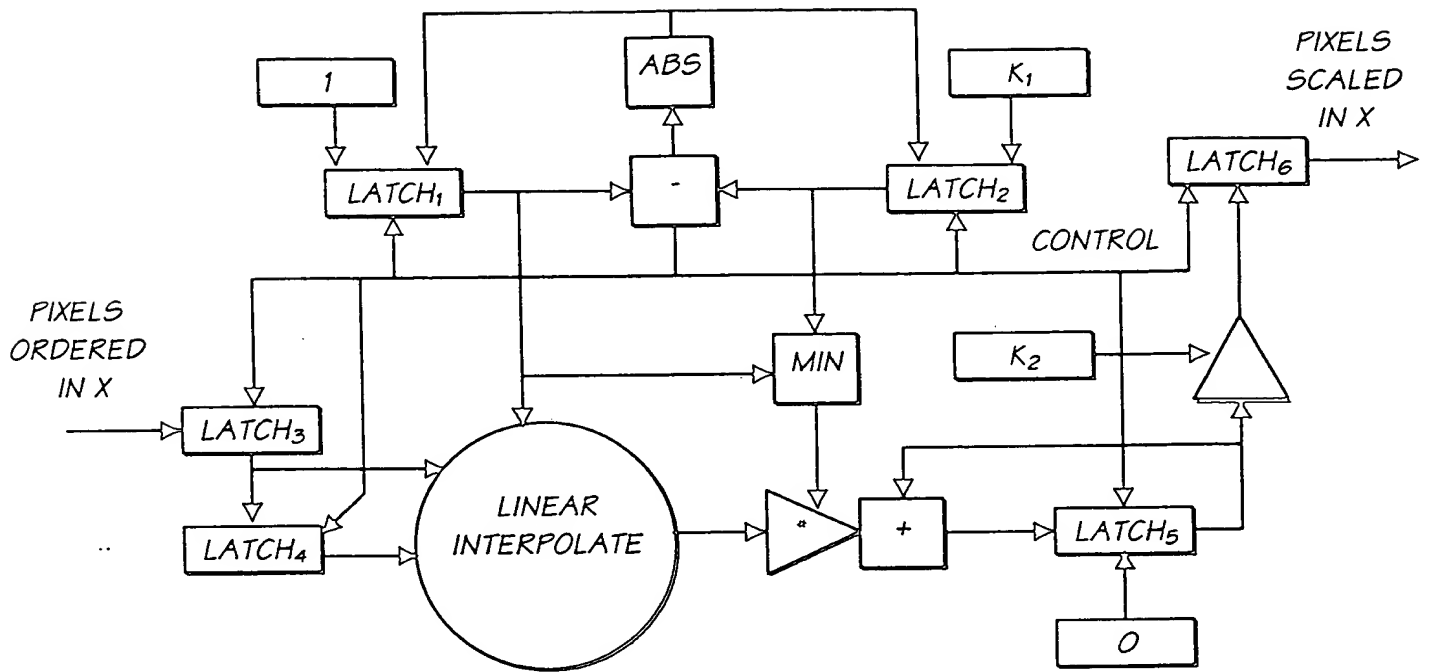


FIG. 99

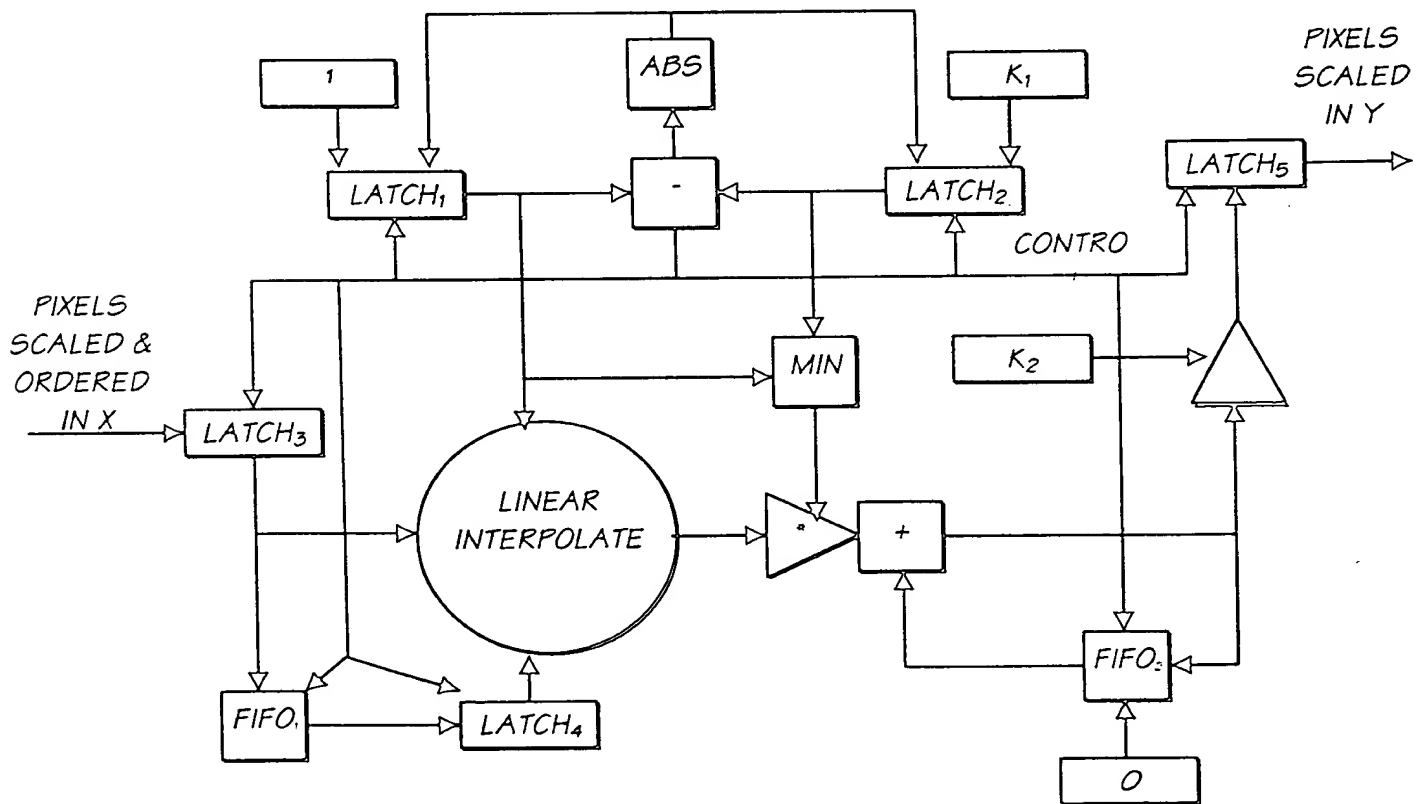
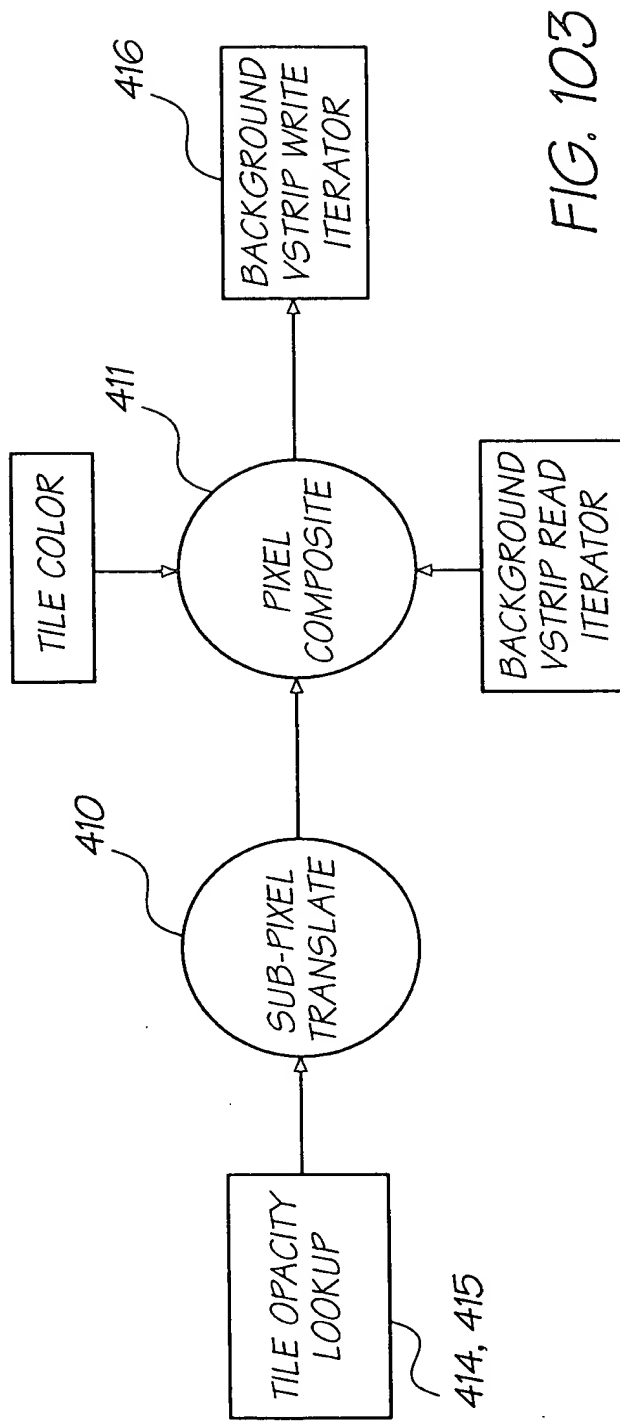
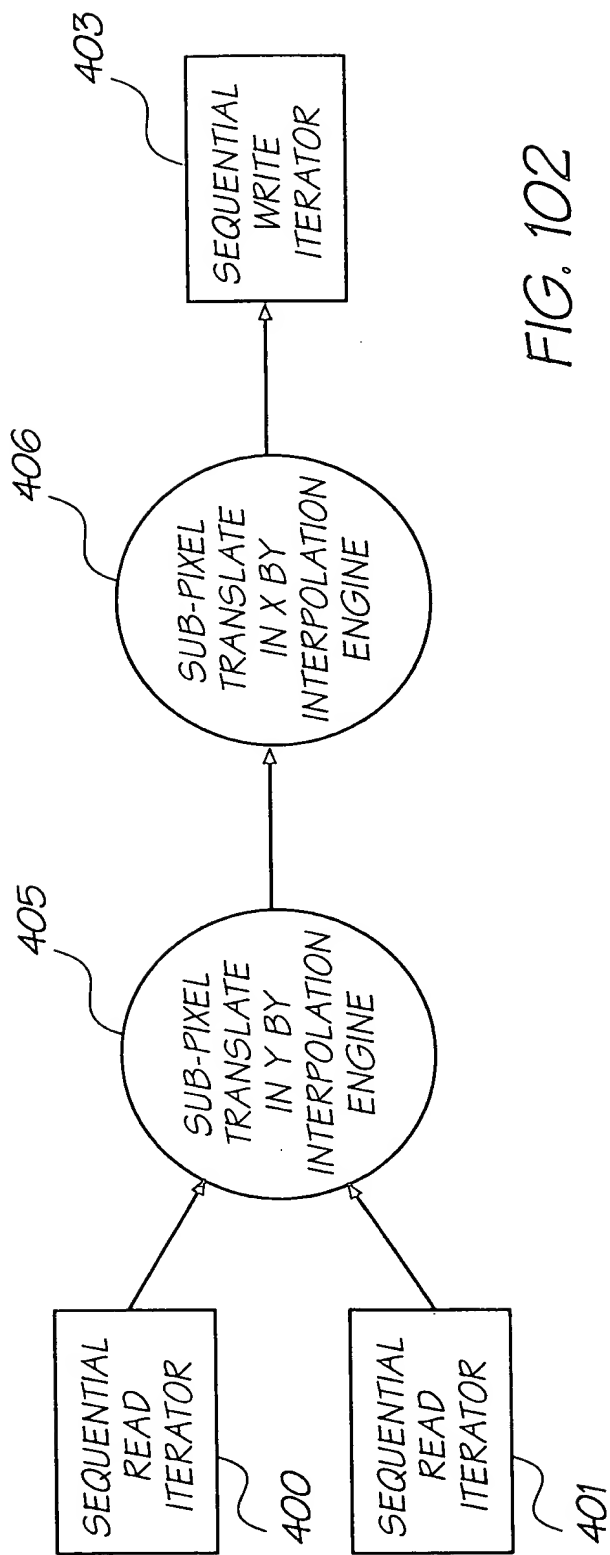


FIG. 100



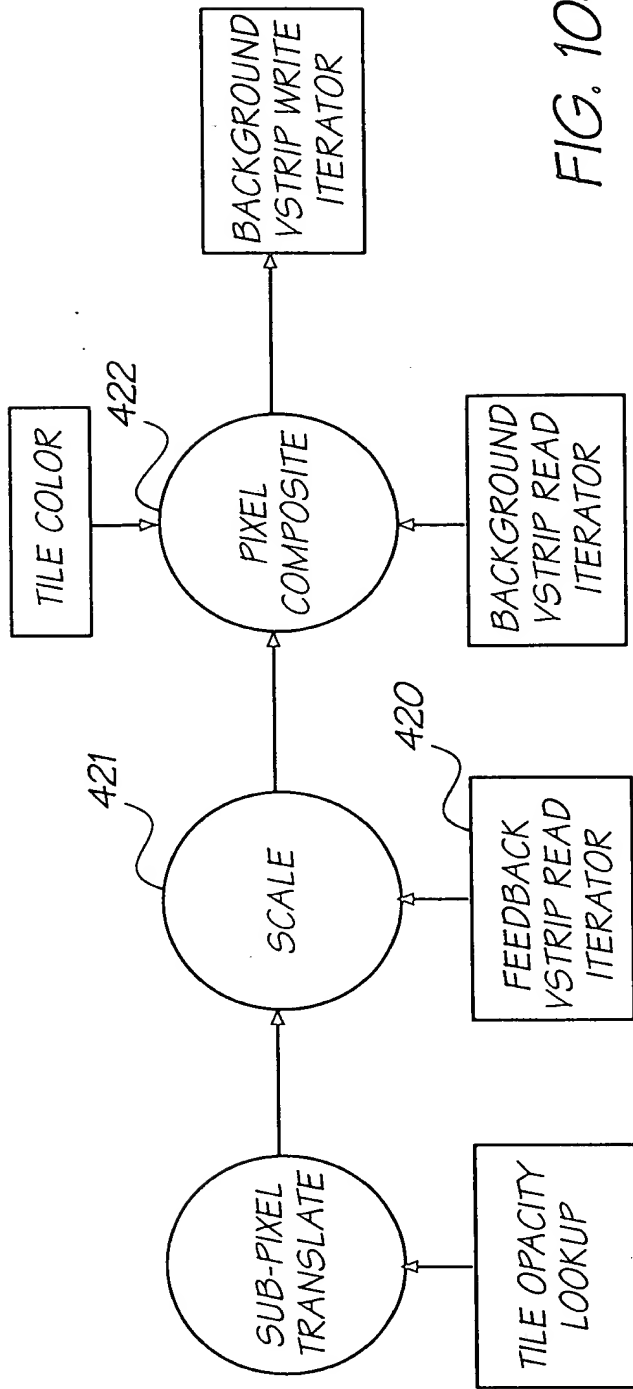


FIG. 104

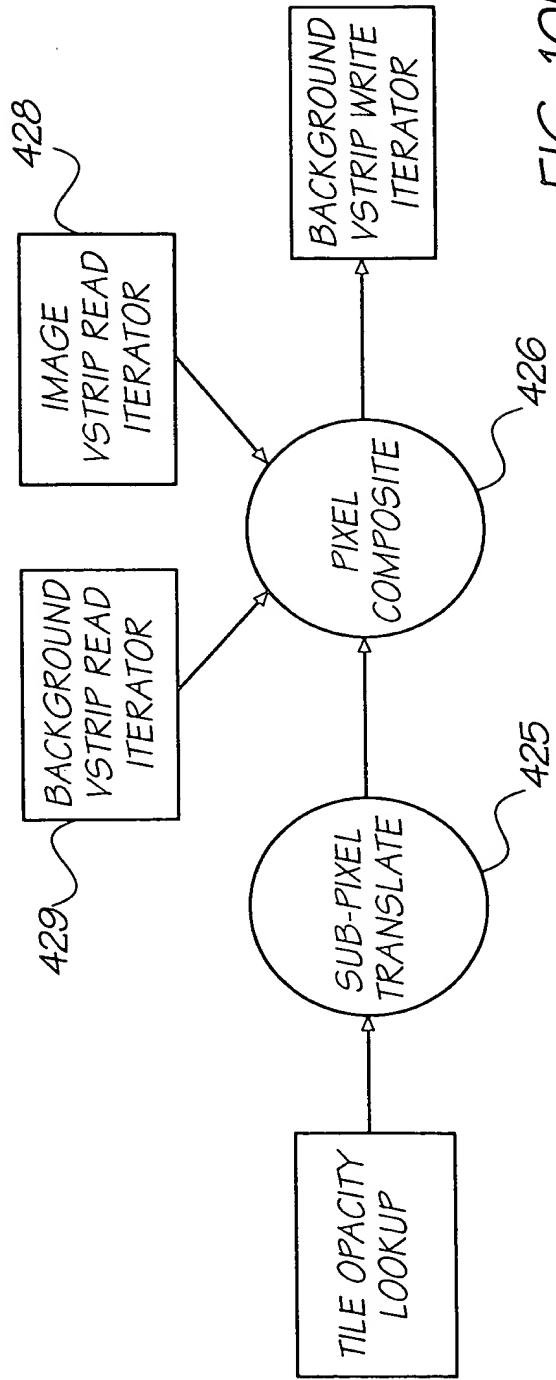


FIG. 105

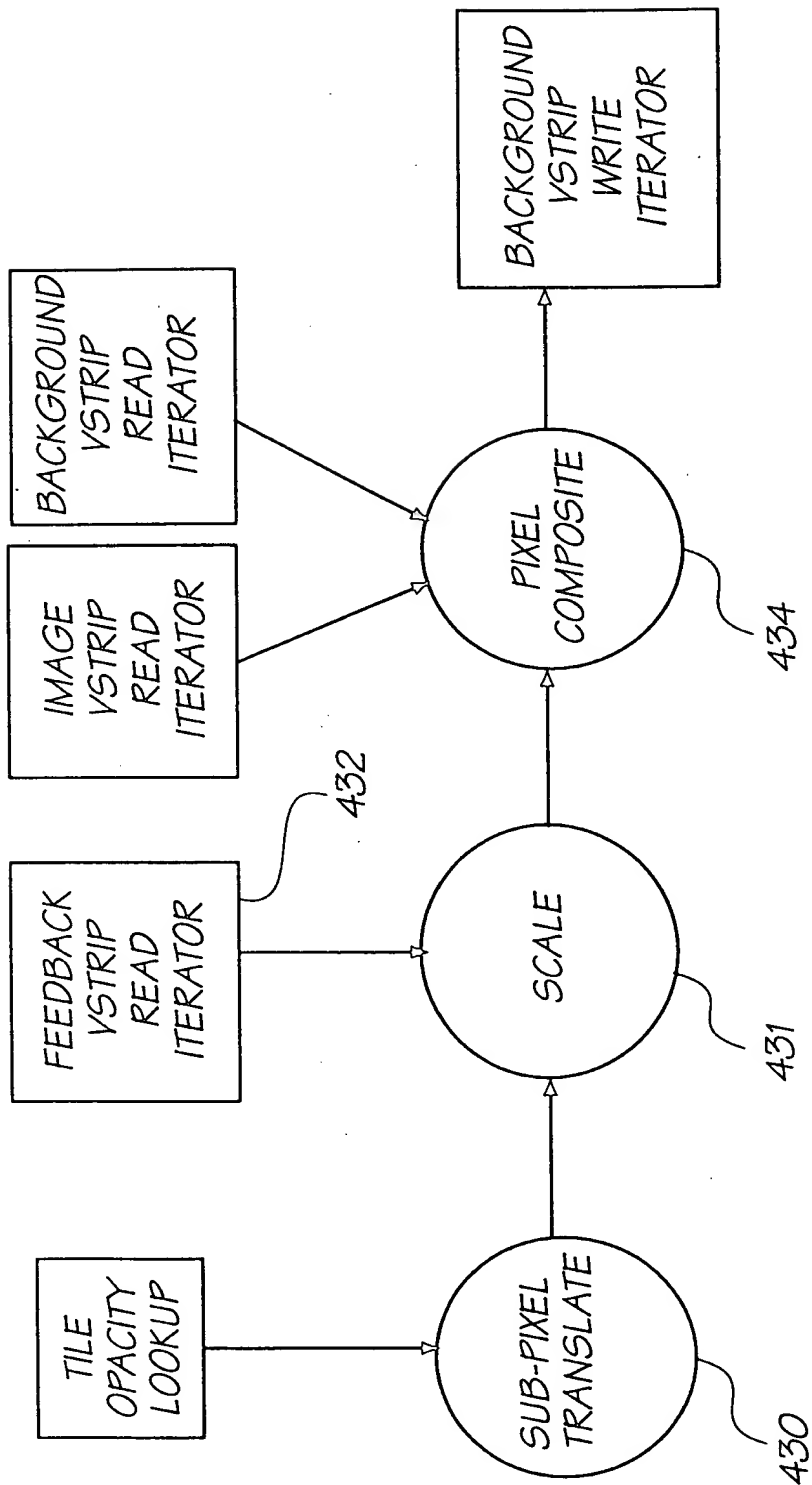


FIG. 106

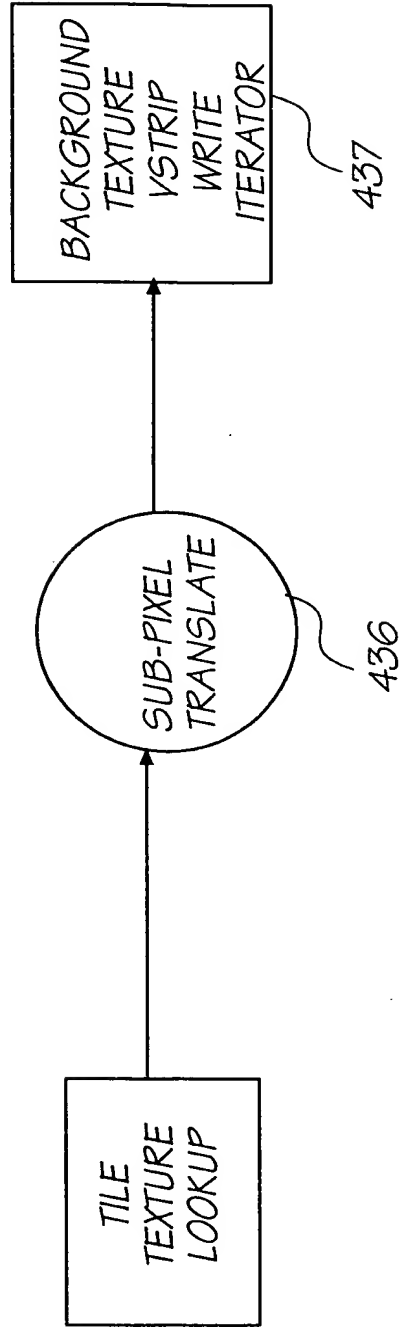


FIG. 107

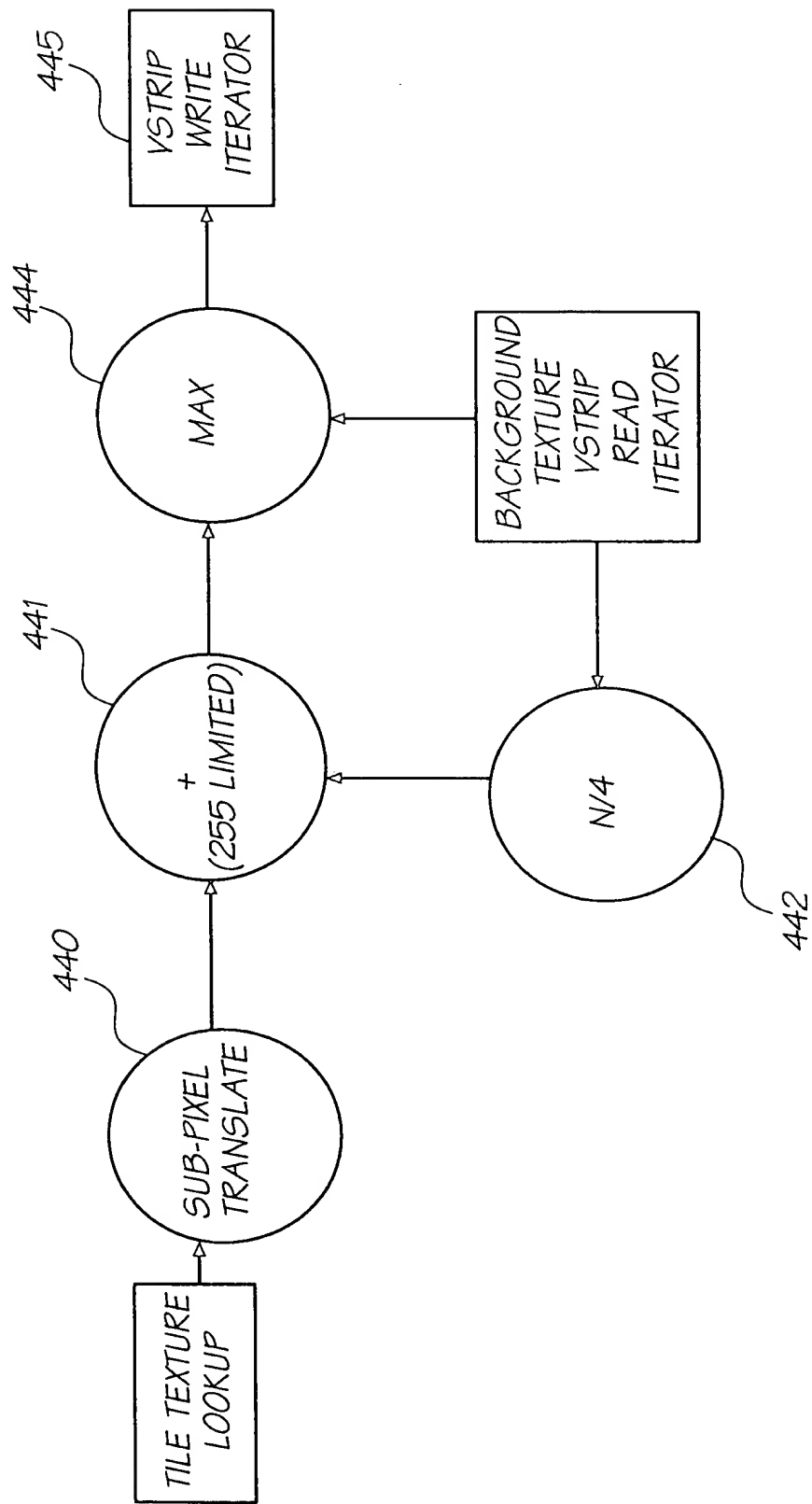


FIG. 108

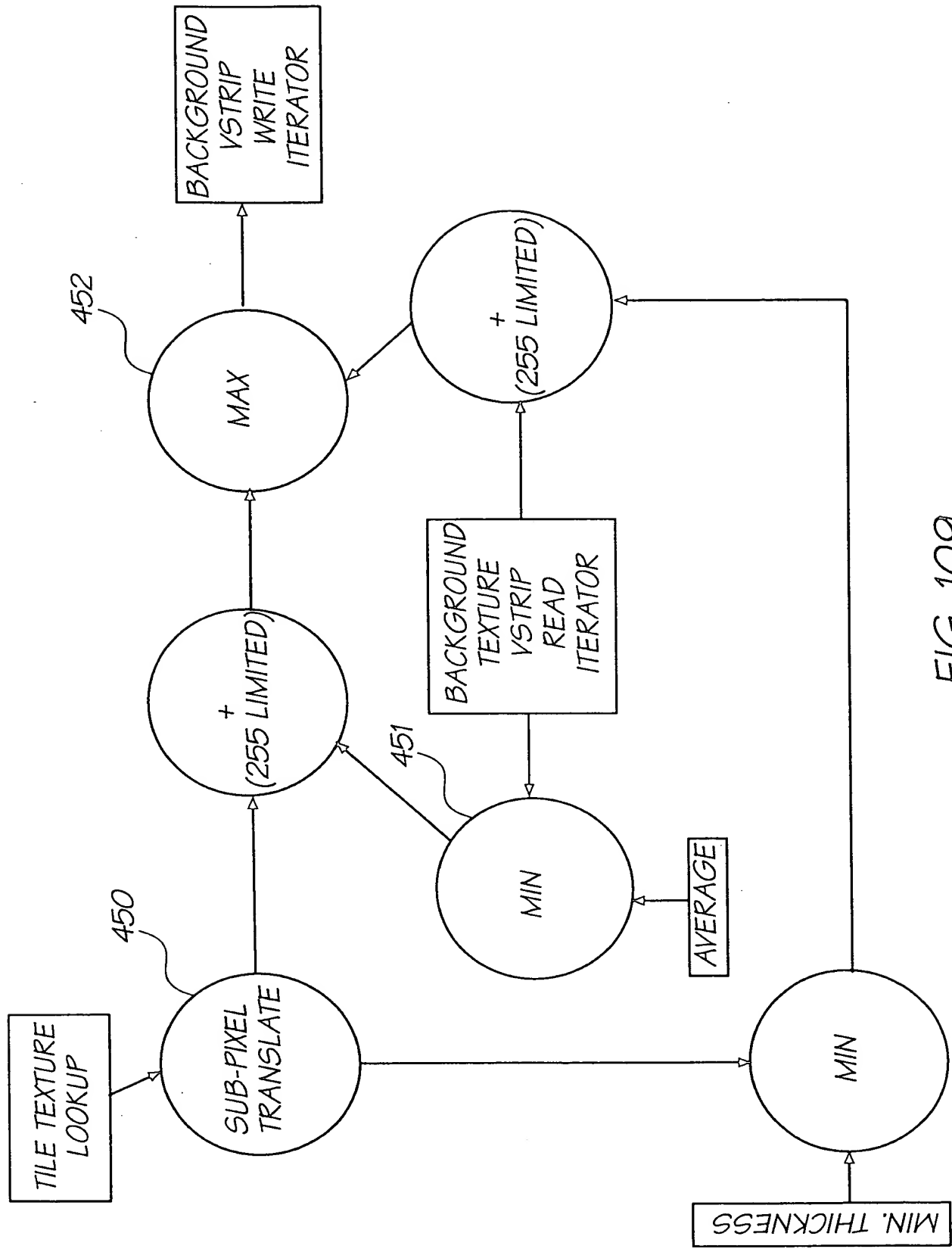


FIG. 109

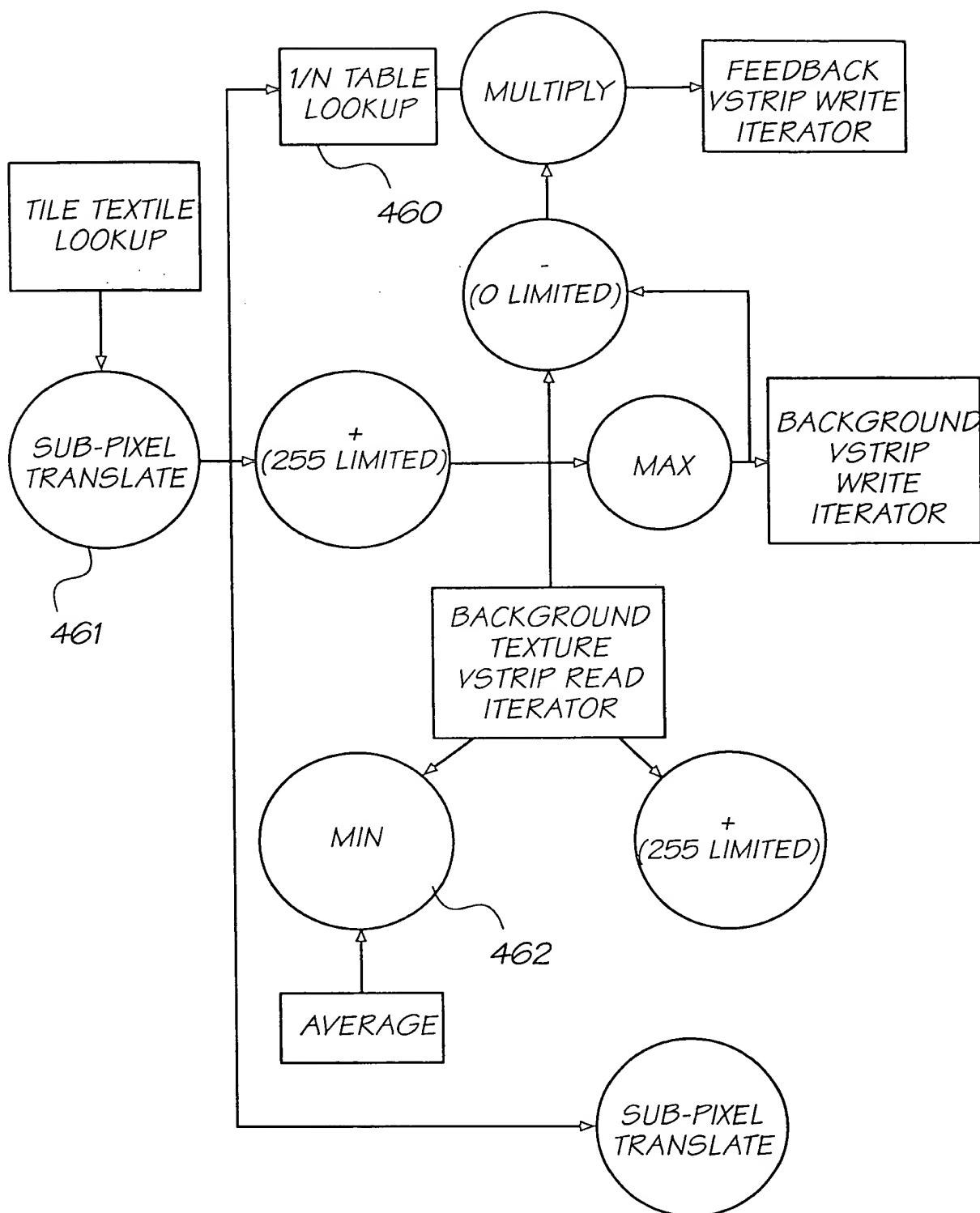


FIG. 110

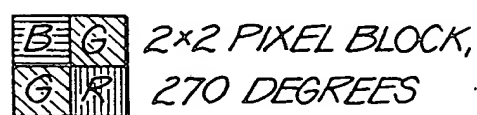
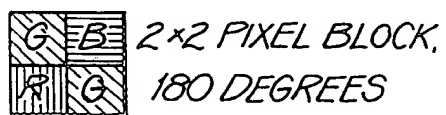
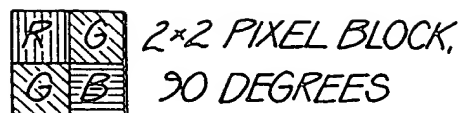
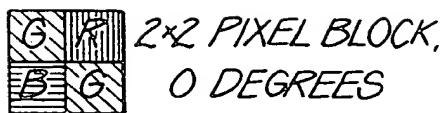
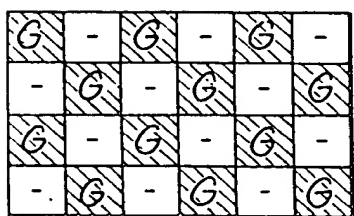


FIG. 111





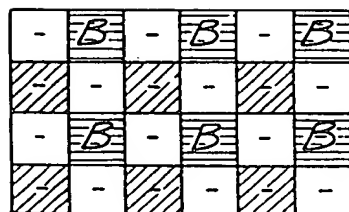
 LINEAR INTERPOLATED
PIXELS
 ACTUAL PIXELS (NOT
INTERPOLATED)

FIG. 112






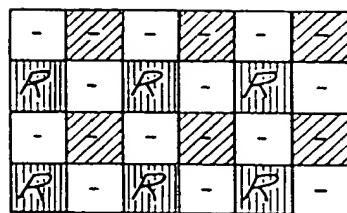
-  LINEAR INTERPOLATED
PIXELS
-  BI-LINEAR INTERPOLATED
PIXELS
-  ACTUAL PIXELS (NOT
INTERPOLATED)

FIG. 113






-  LINEAR INTERPOLATED
PIXELS
-  BI-LINEAR INTERPOLATED
PIXELS
-  ACTUAL PIXELS (NOT
INTERPOLATED)

FIG. 114

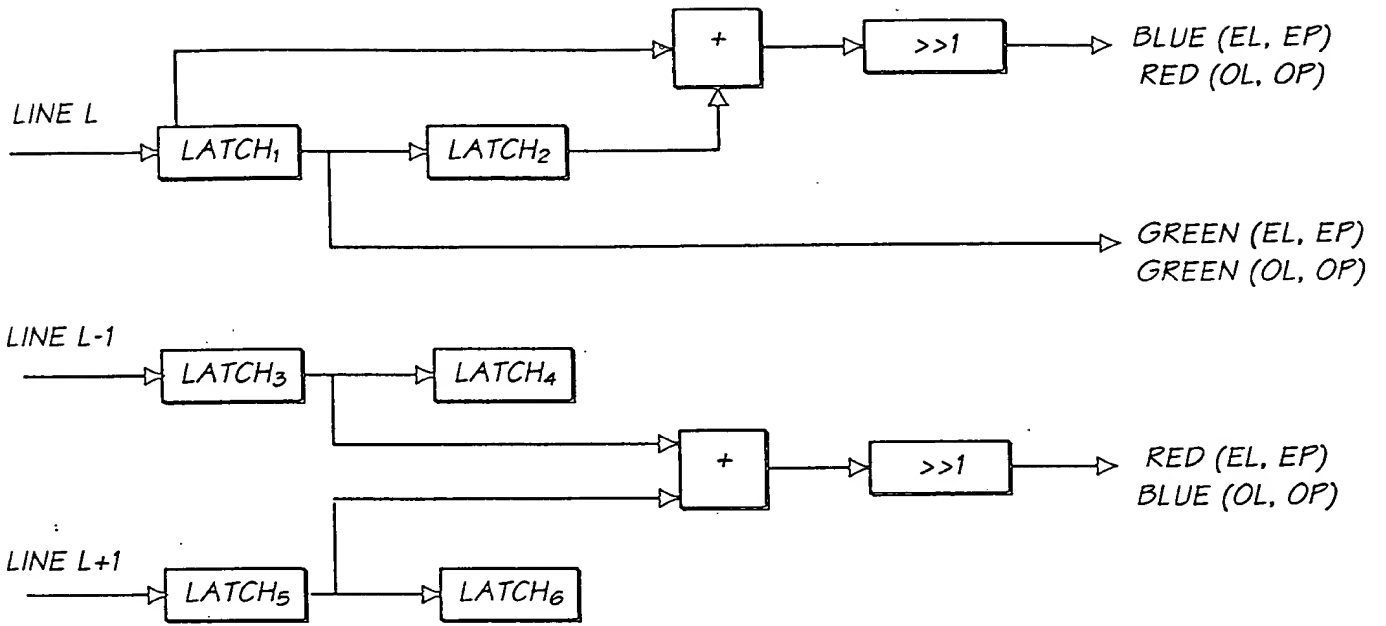


FIG. 115

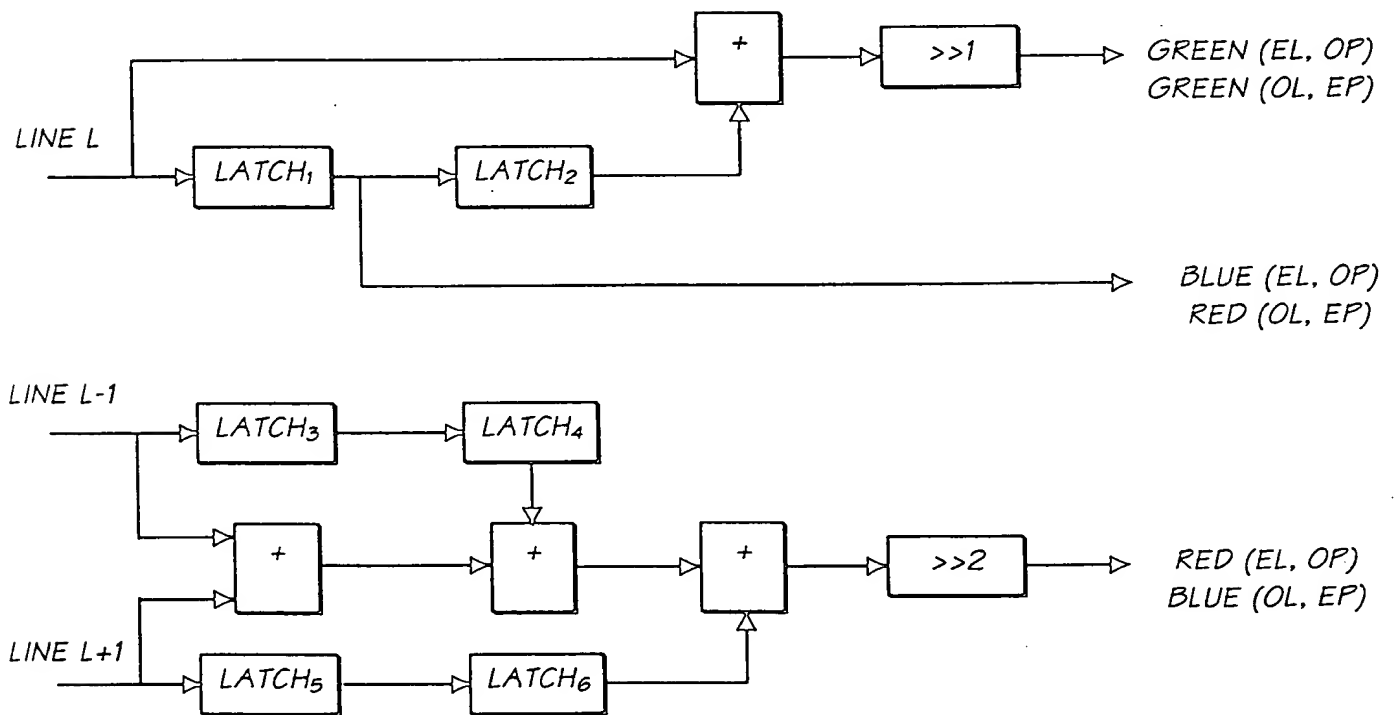


FIG. 116

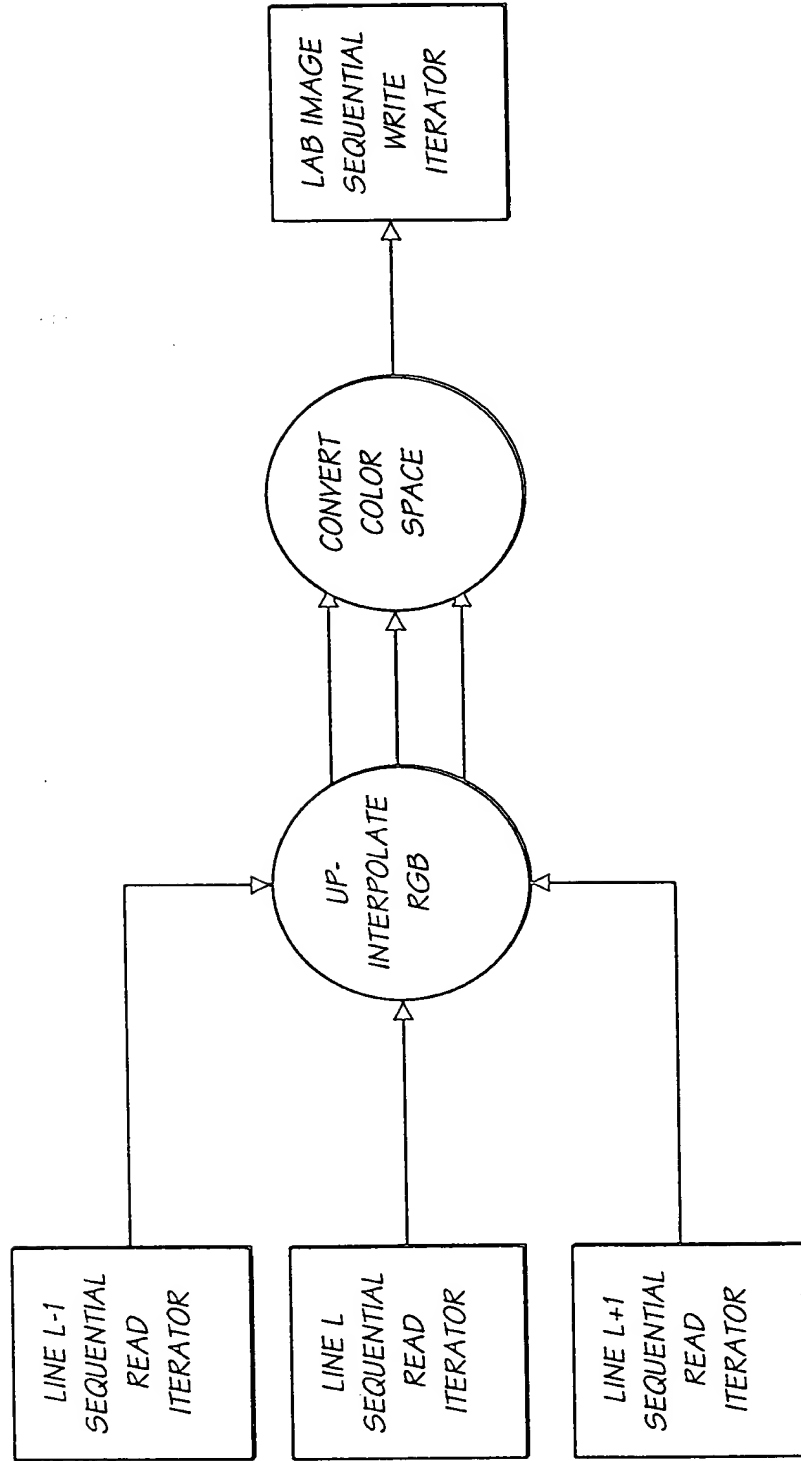


FIG. 117

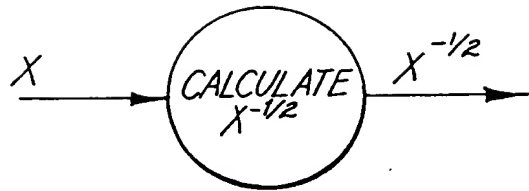


FIG. 118

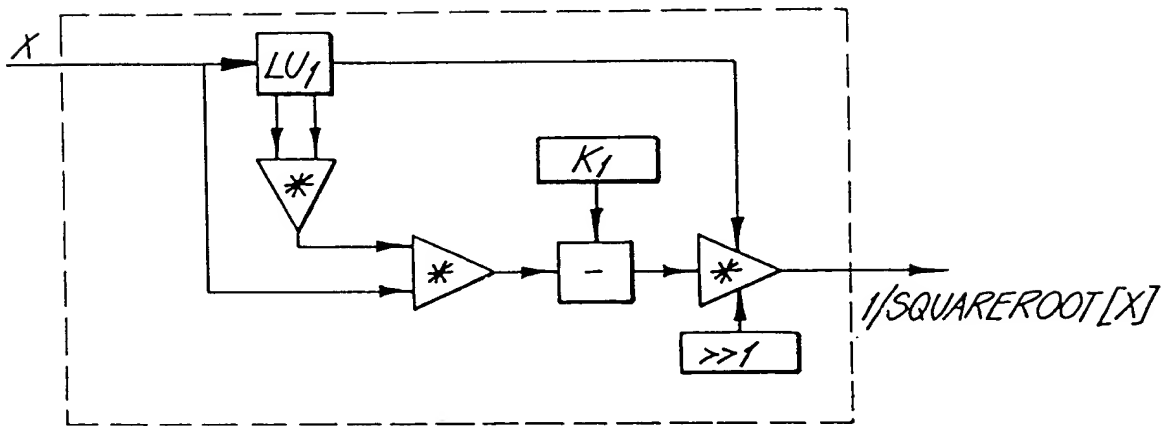


FIG. 119

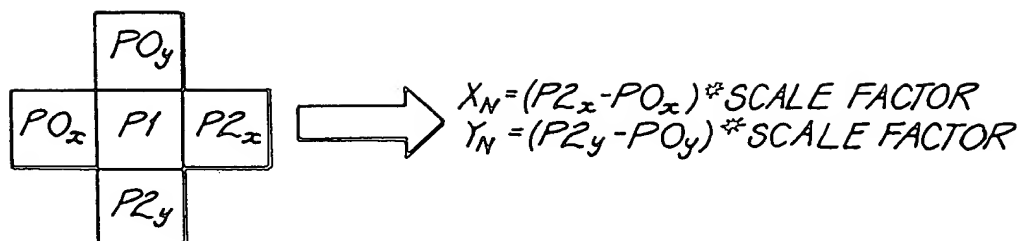


FIG. 120

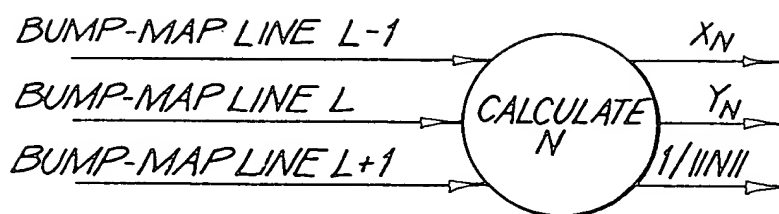


FIG. 121

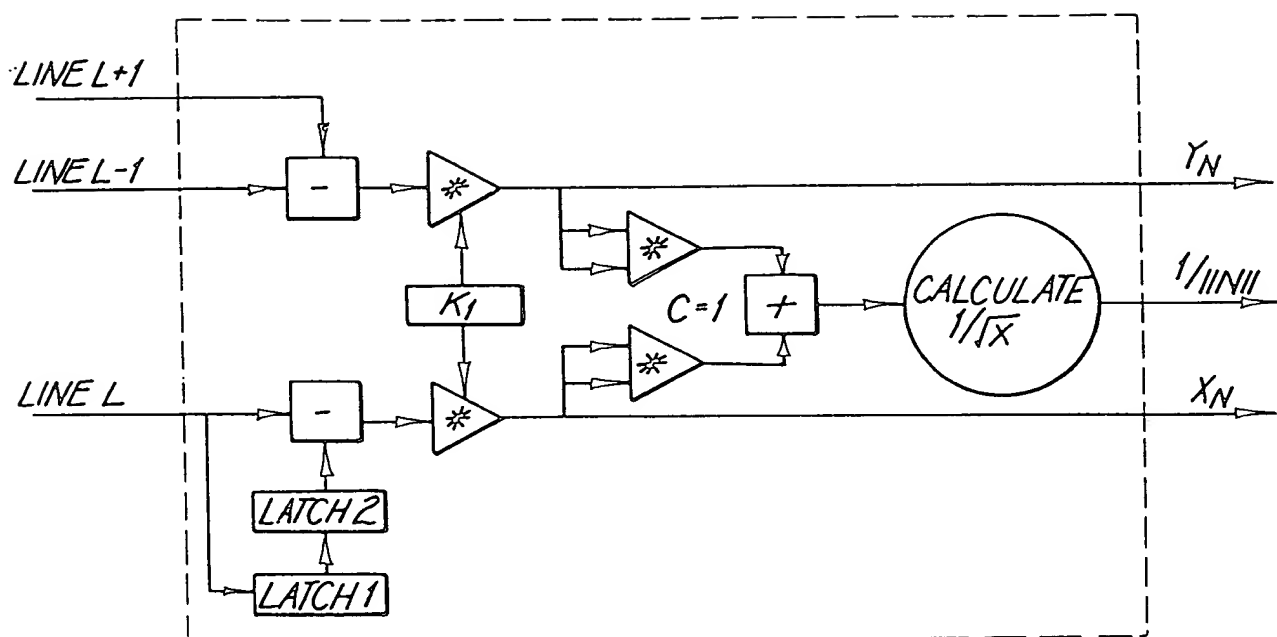


FIG. 122

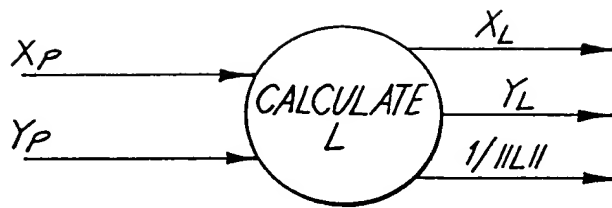


FIG. 123

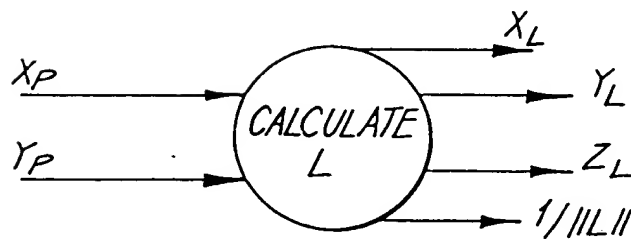


FIG. 124

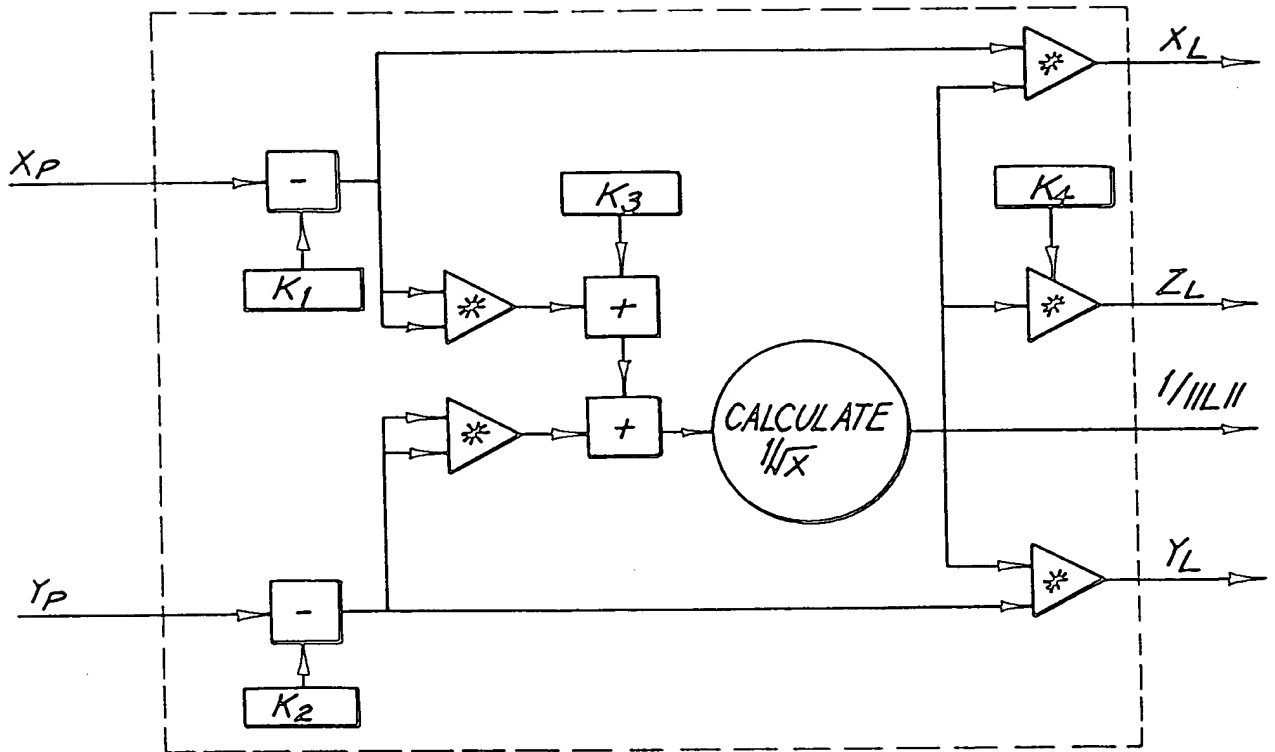


FIG. 125

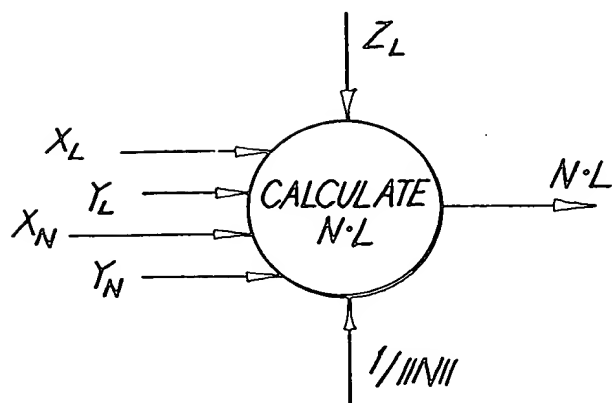


FIG. 126

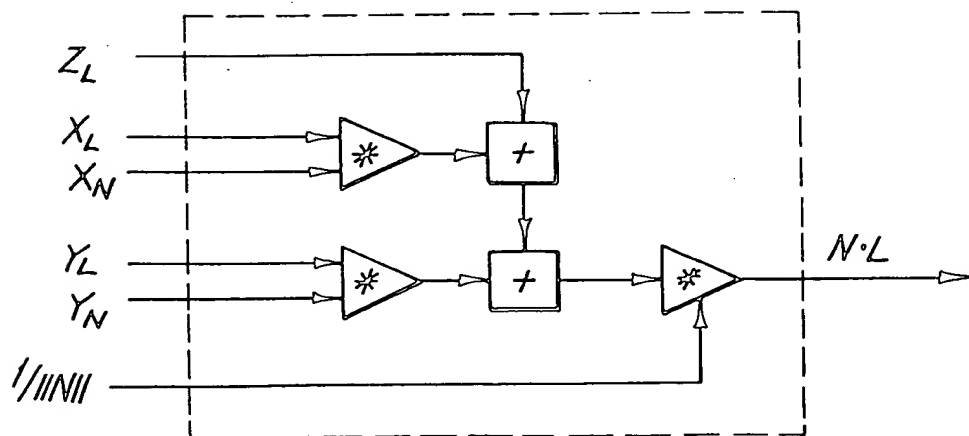


FIG. 127

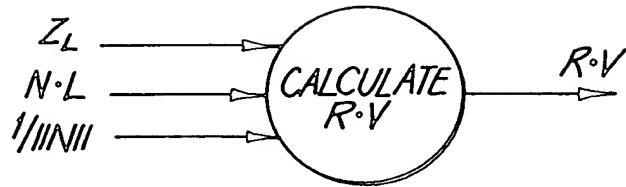


FIG. 128

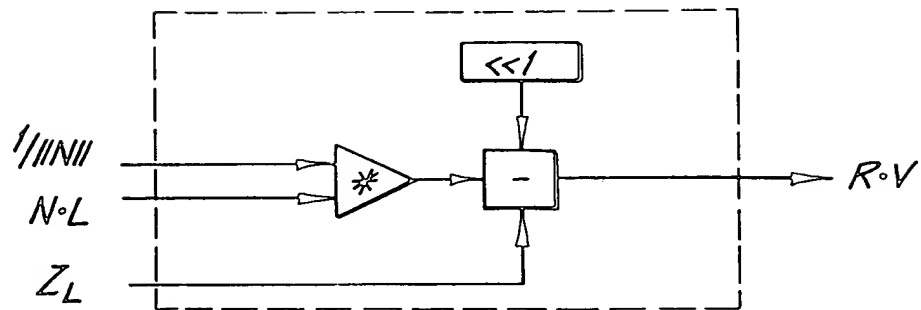


FIG. 129

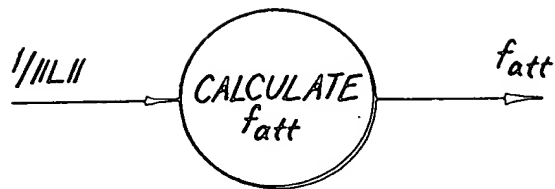


FIG. 130

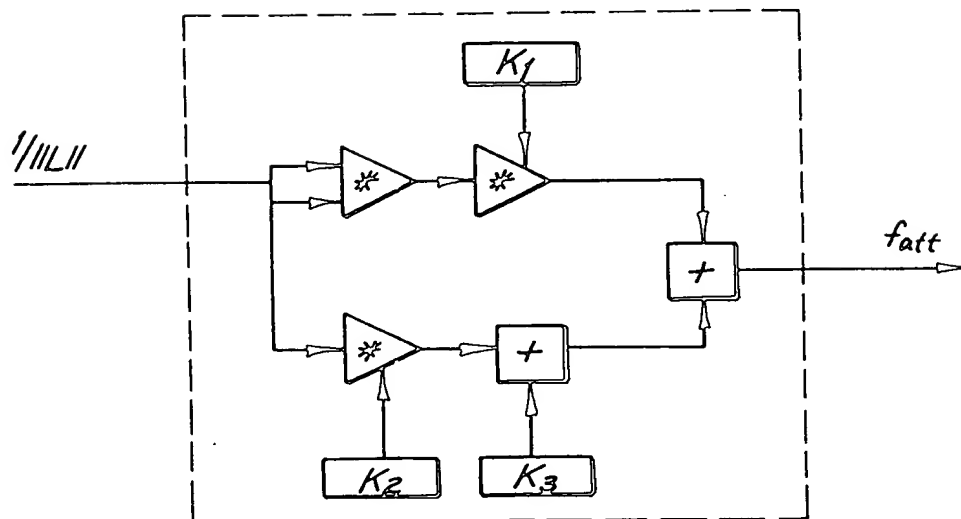


FIG. 131

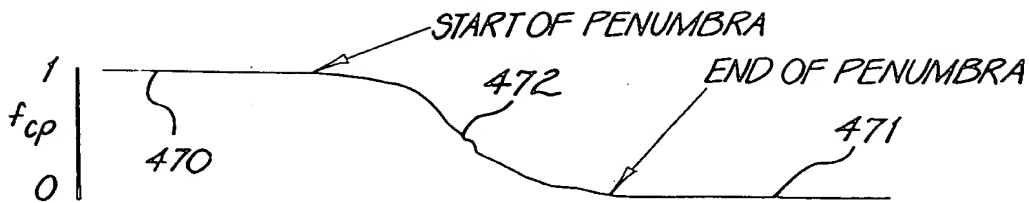


FIG. 132

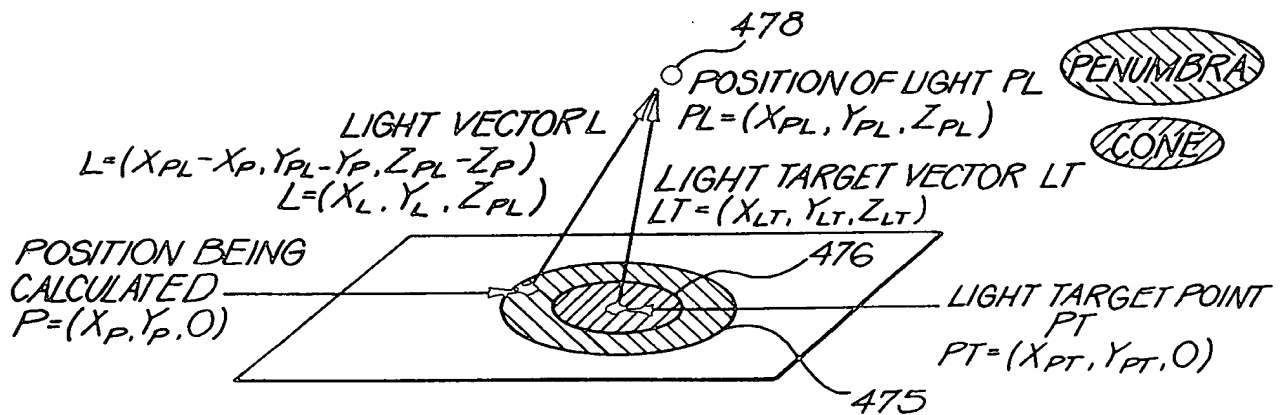


FIG. 133

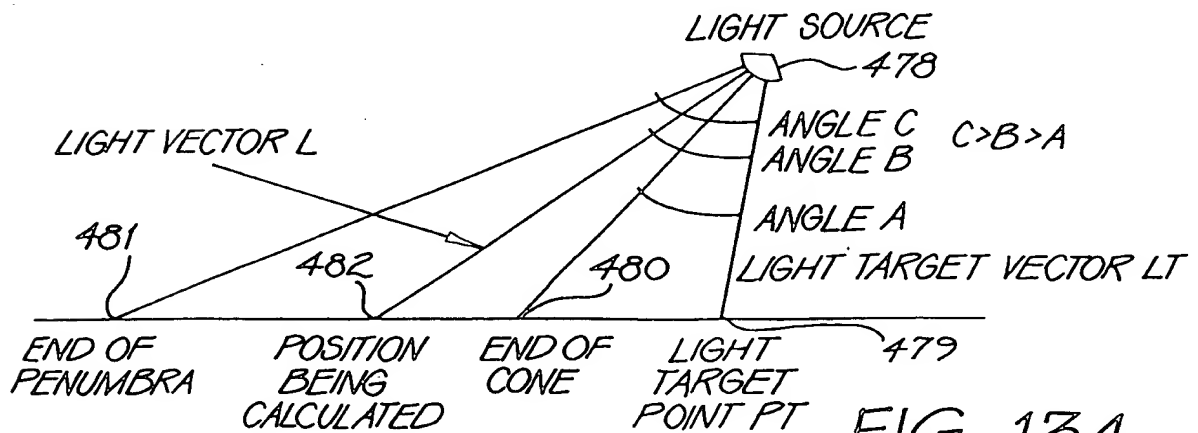


FIG. 134

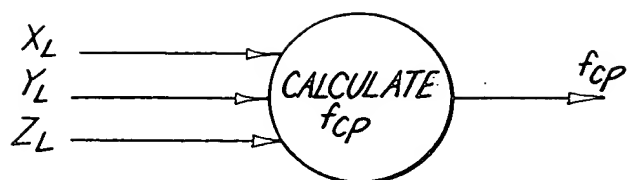


FIG. 135

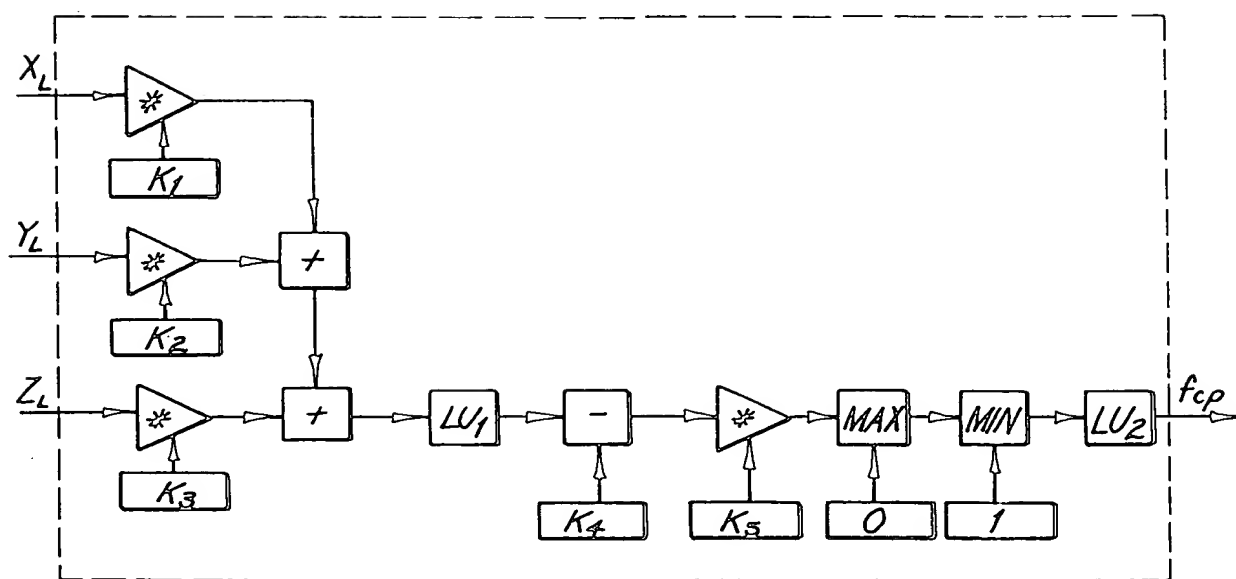


FIG. 136

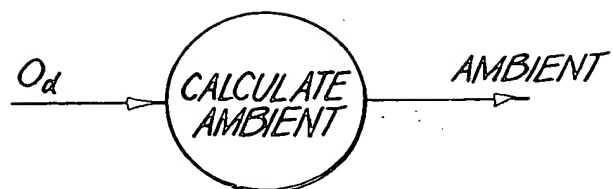


FIG. 137

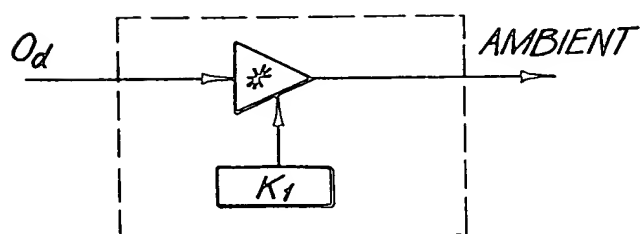


FIG. 138

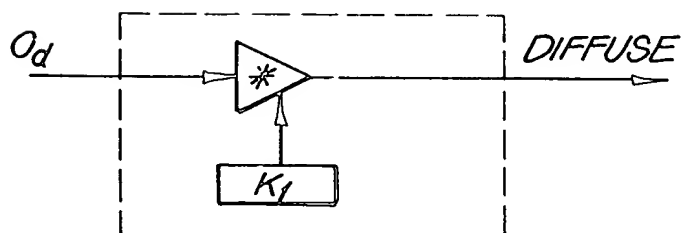


FIG. 139

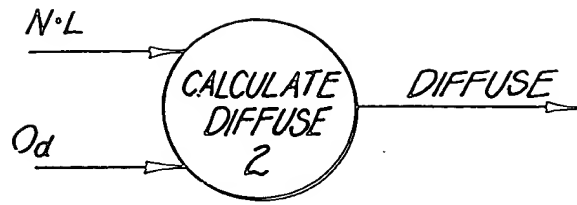


FIG. 140

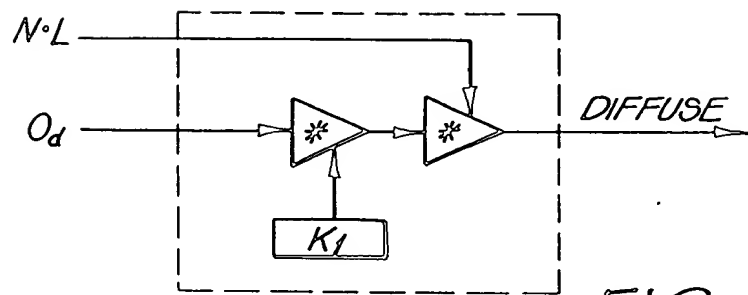


FIG. 141

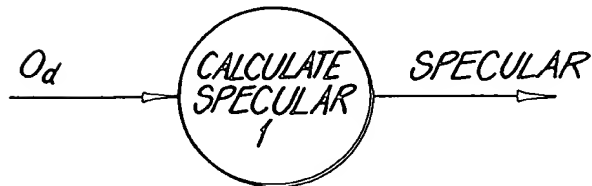


FIG. 142

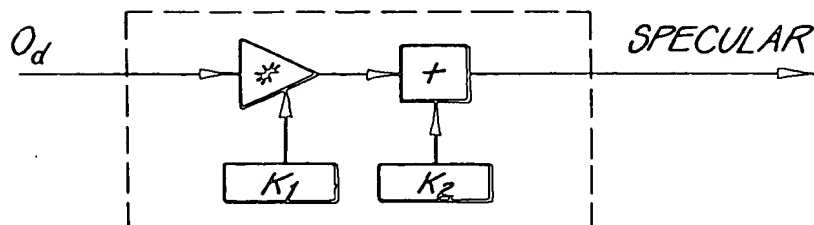


FIG. 143

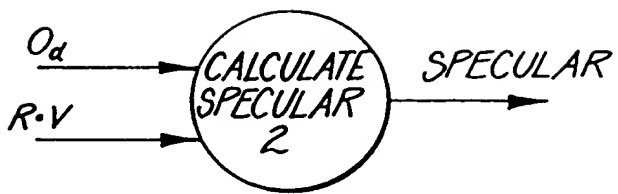


FIG. 144

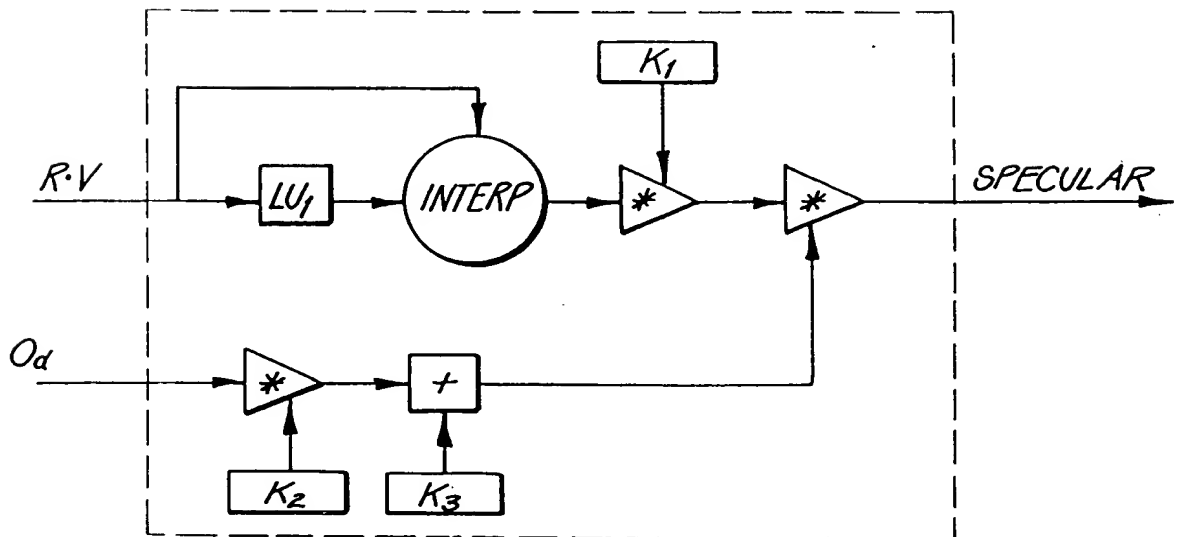


FIG. 145

09442786, 071098

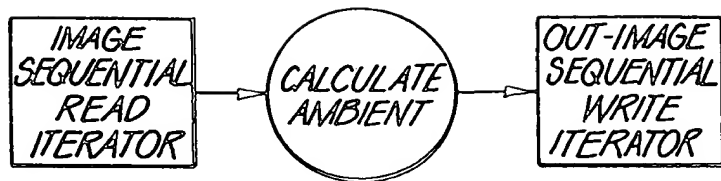


FIG. 146

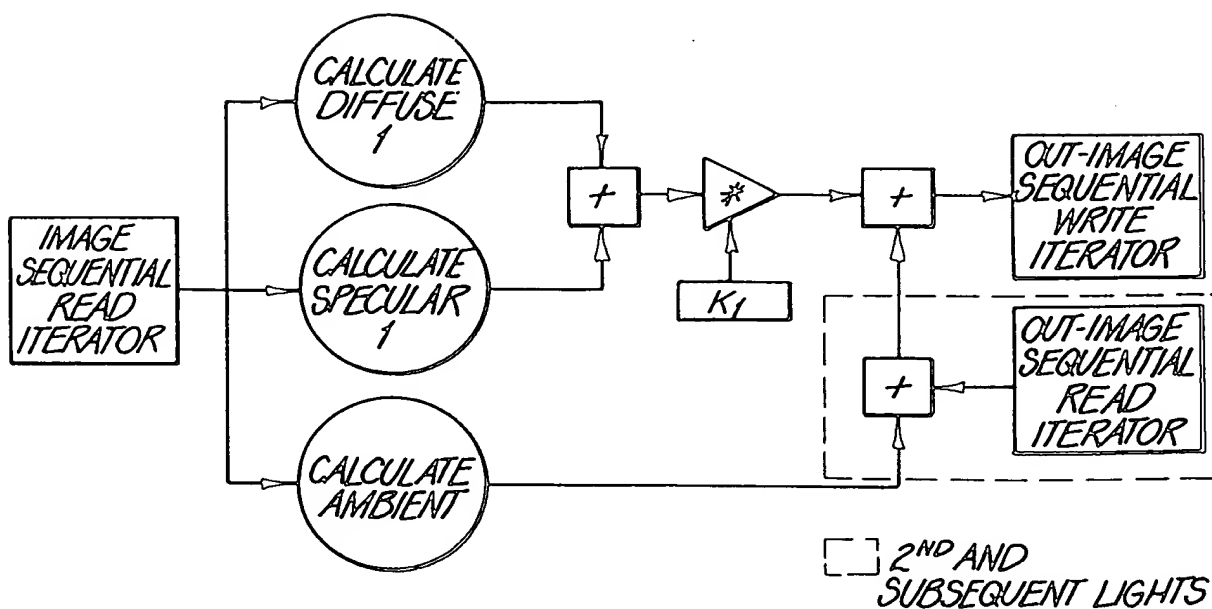


FIG. 147

09112785 "071098

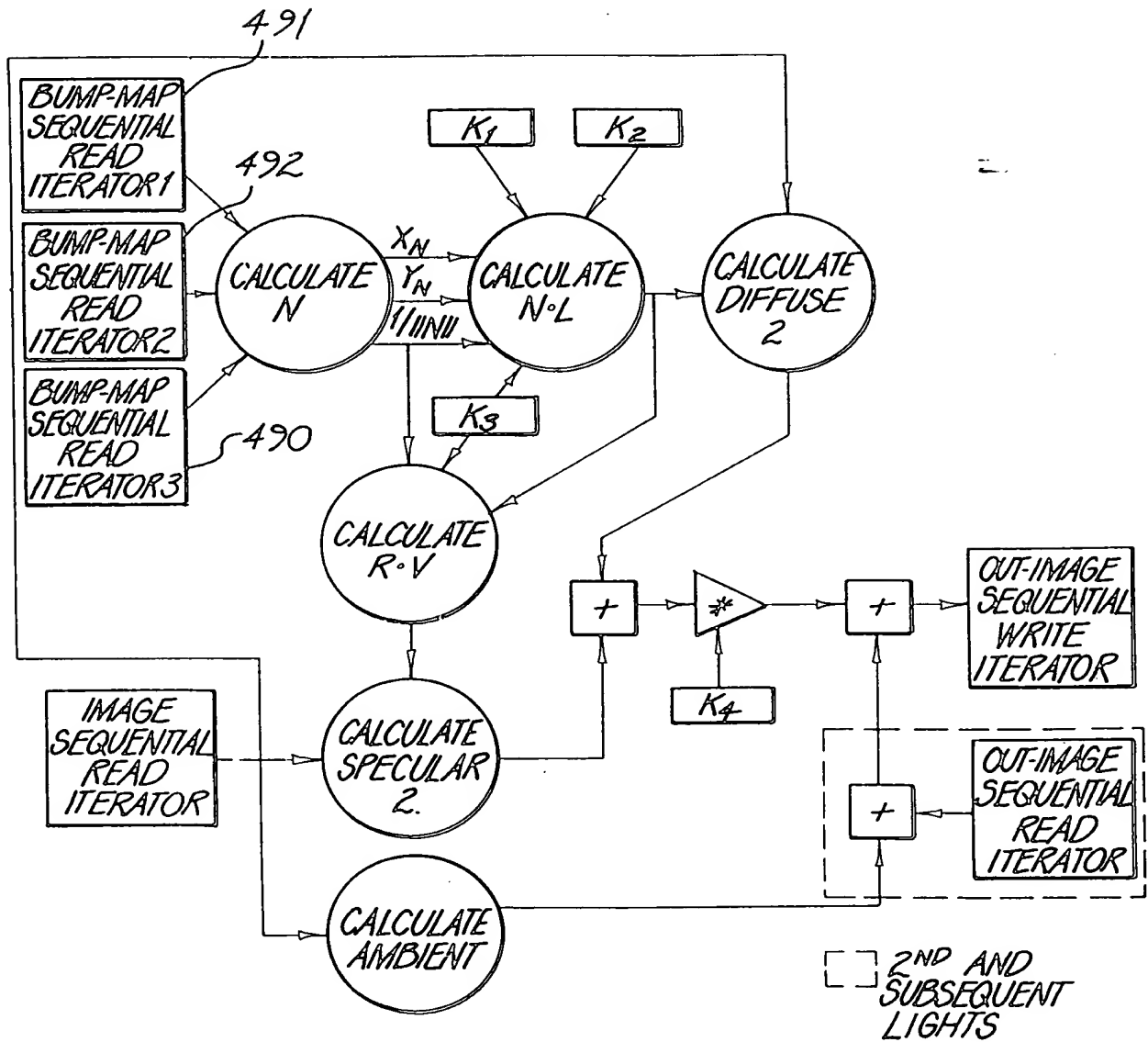


FIG. 148

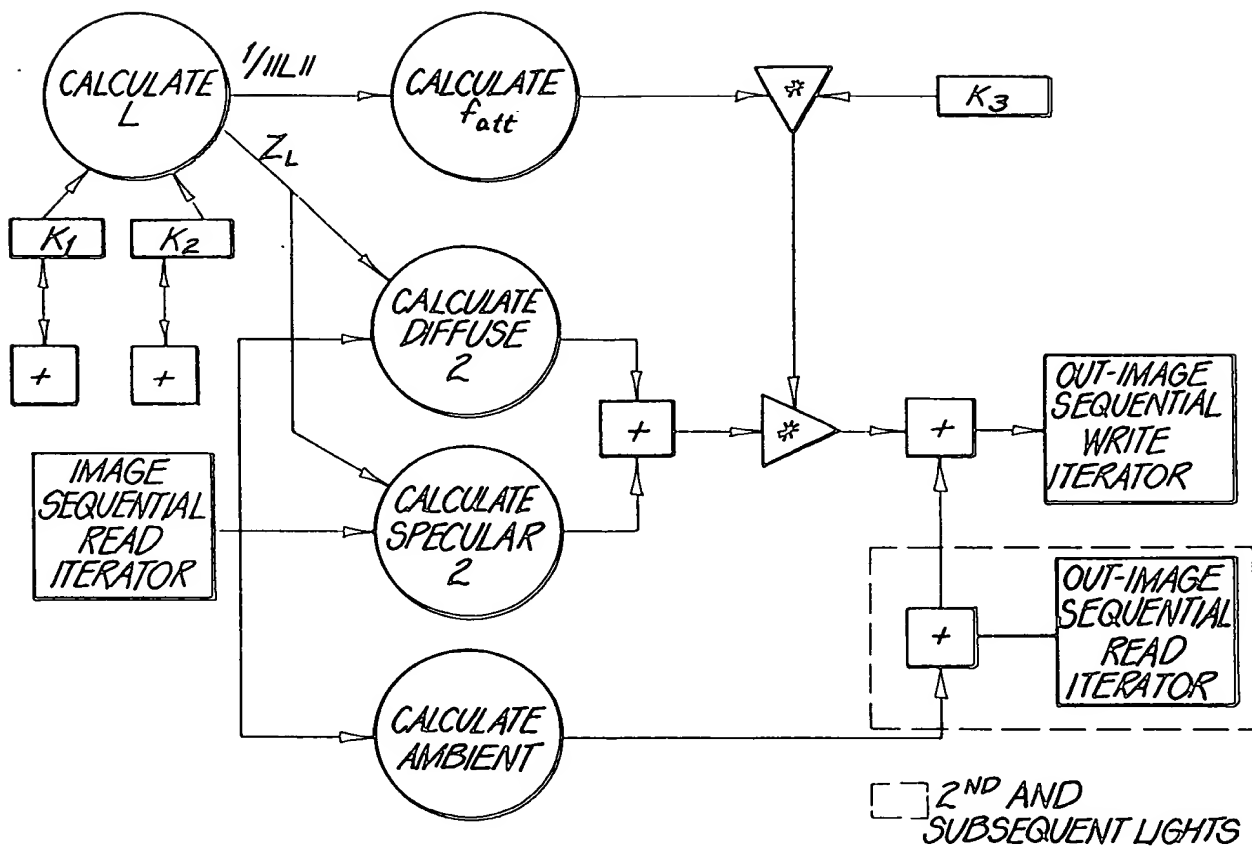


FIG. 149

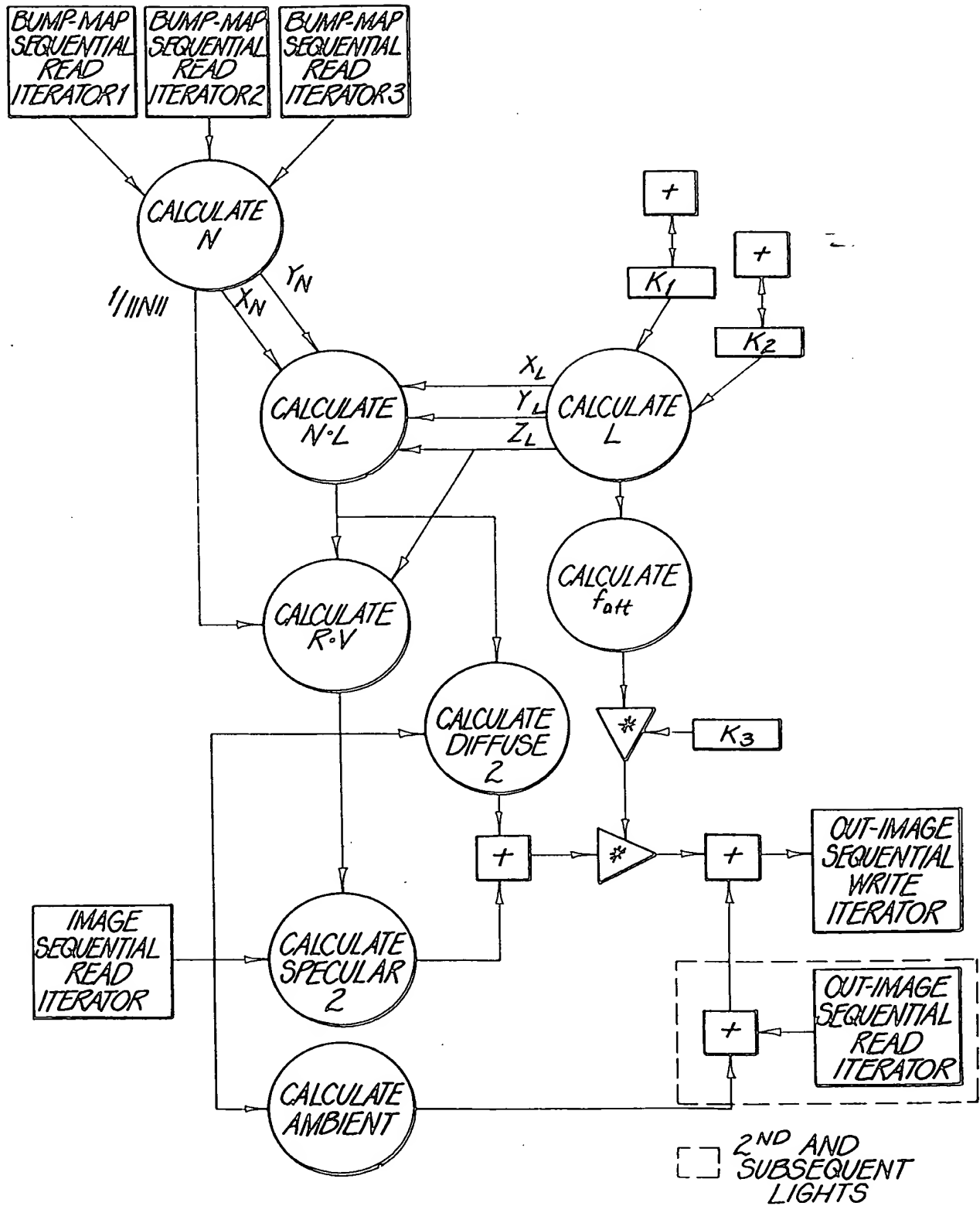


FIG. 150

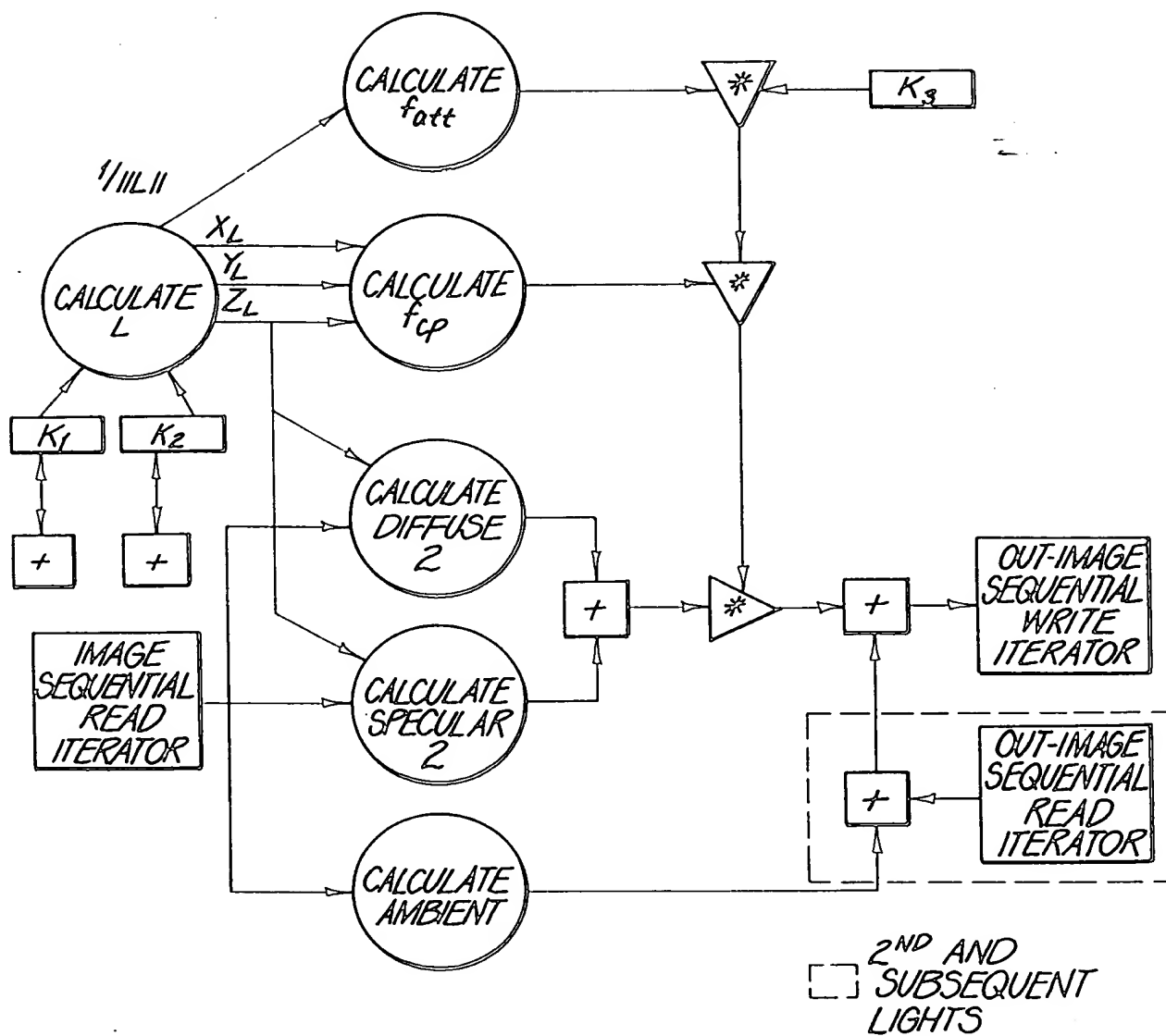


FIG. 151

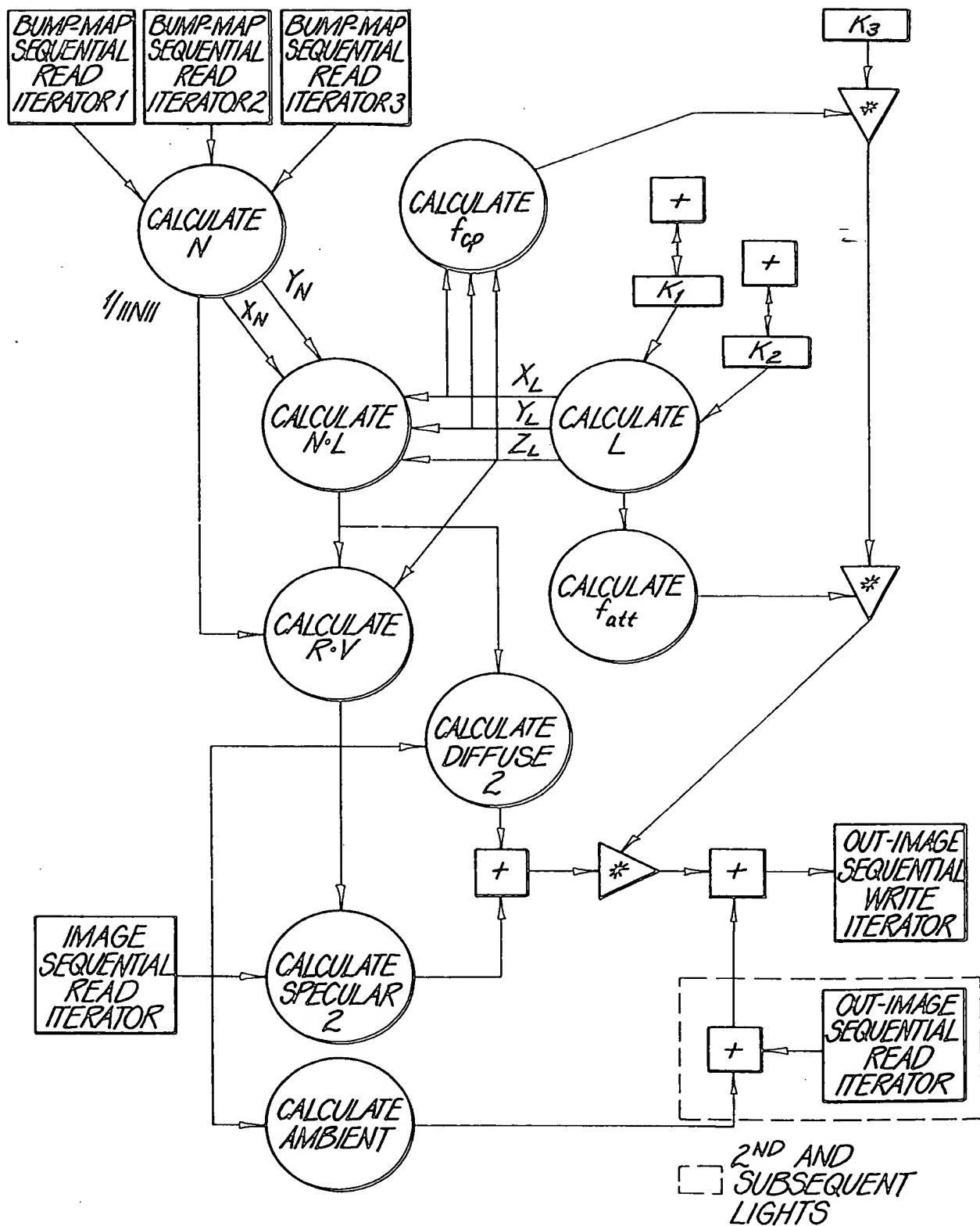
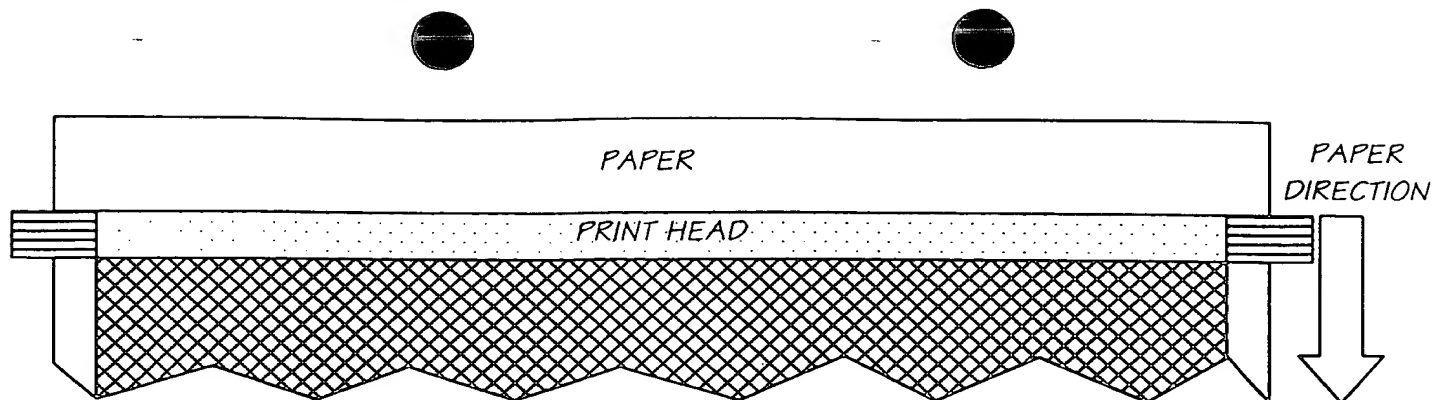


FIG. 152

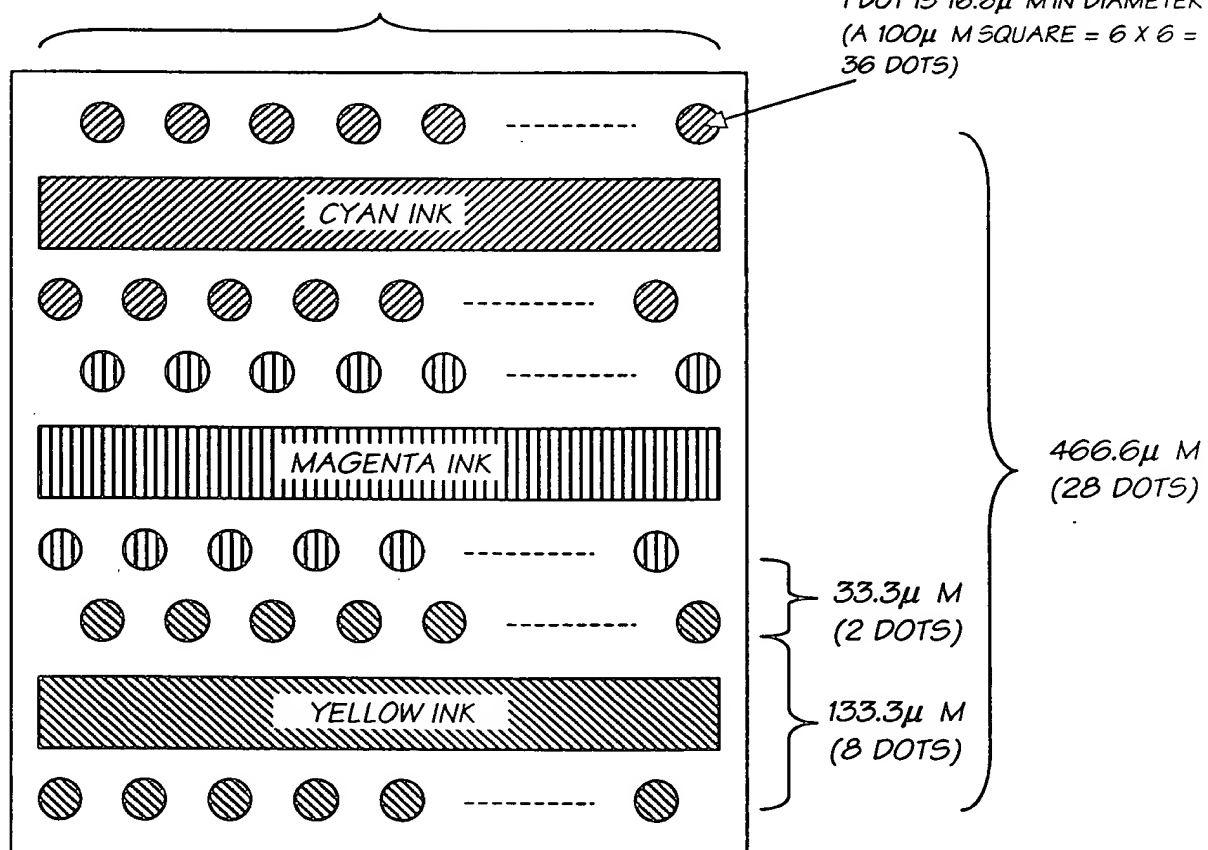
09413735.074038



8 PRINT HEAD SEGMENTS IN PRINT HEAD

SEGMENT 0	SEGMENT 1	SEGMENT 2	SEGMENT 3	SEGMENT 4	SEGMENT 5	SEGMENT 6	SEGMENT 7
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1250 μ M
(375 DOTS PER SEGMENT ROW, OR 750 DOTS PER SEGMENT)



EACH SEGMENT CONTAINS 6 ROWS OF DOTS: ODD AND EVEN CYAN, MAGENTA, AND YELLOW.

FIG. 153

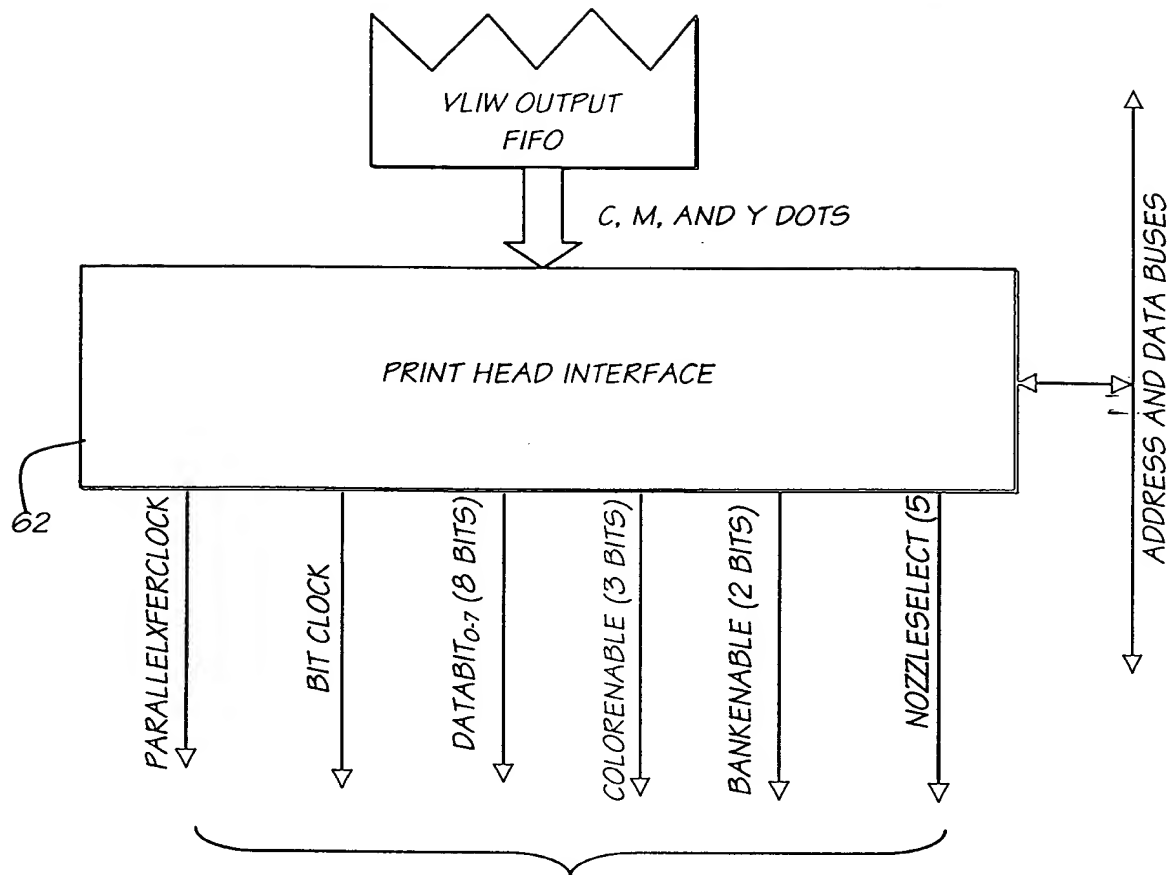


FIG. 154

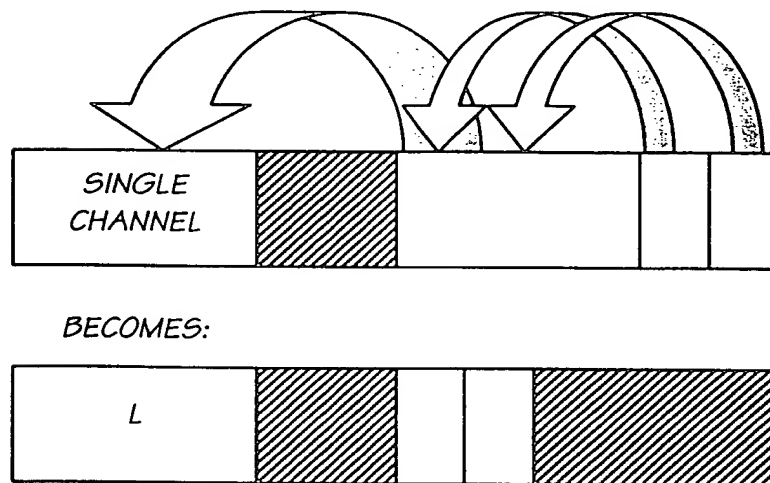
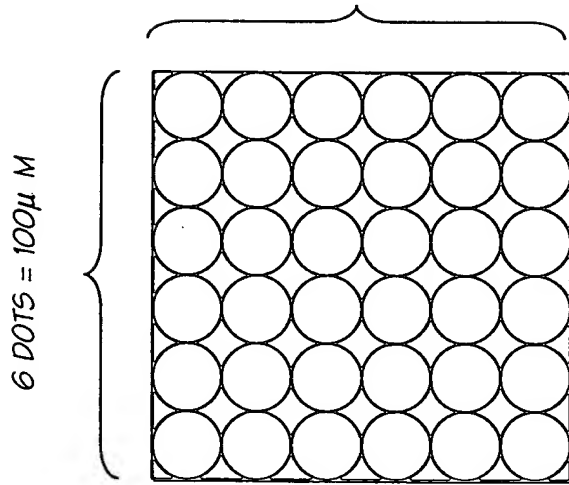


FIG. 155

6 DOTS = 100 μ M



1 PIXEL = 6 X 6 DOTS
= 36 DOTS
= 100 μ M SQUARE

FIG. 156

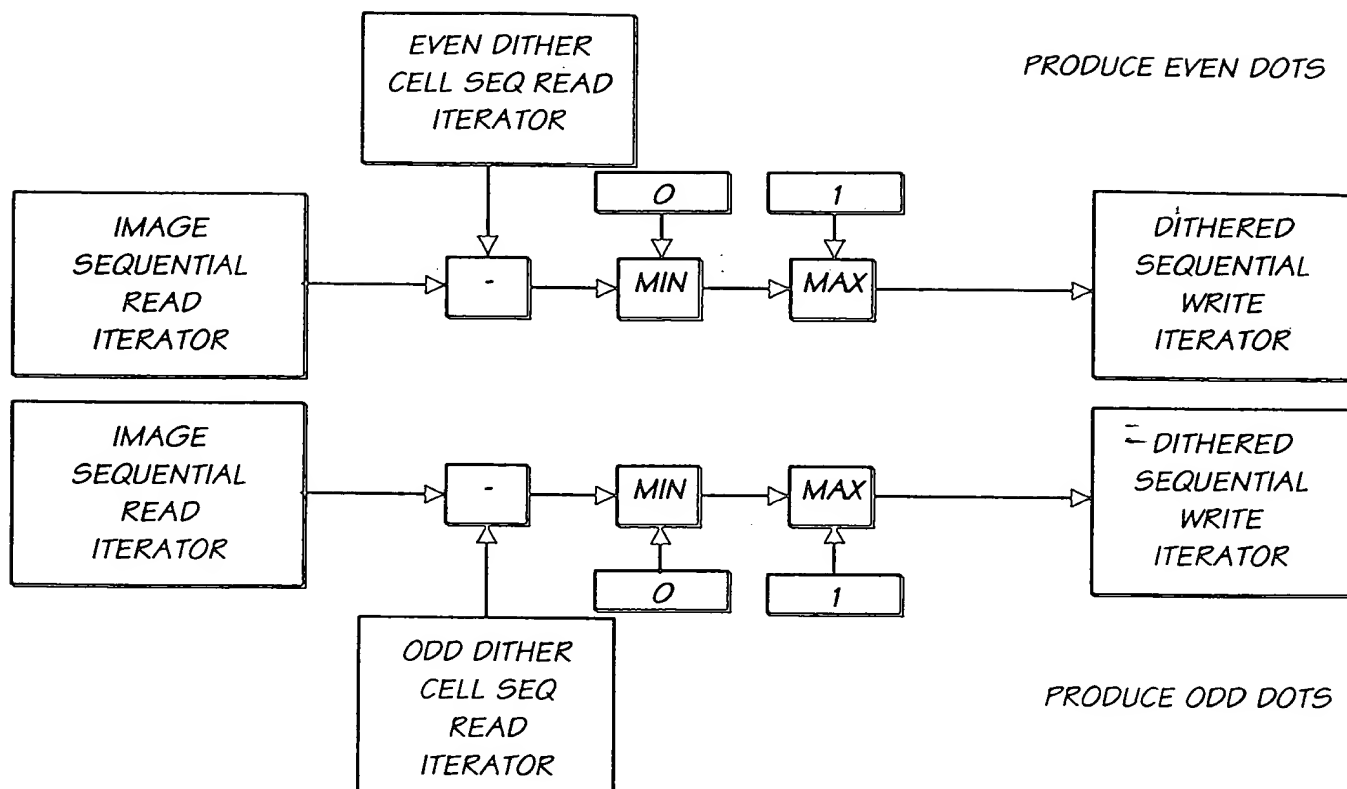


FIG. 157

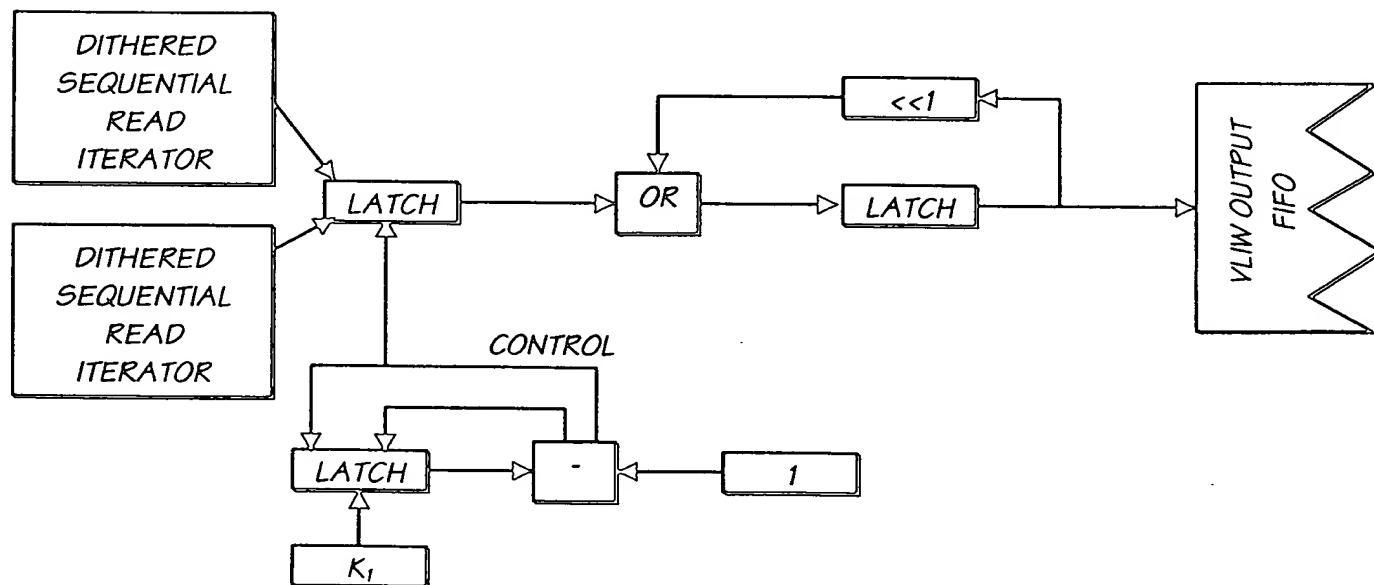
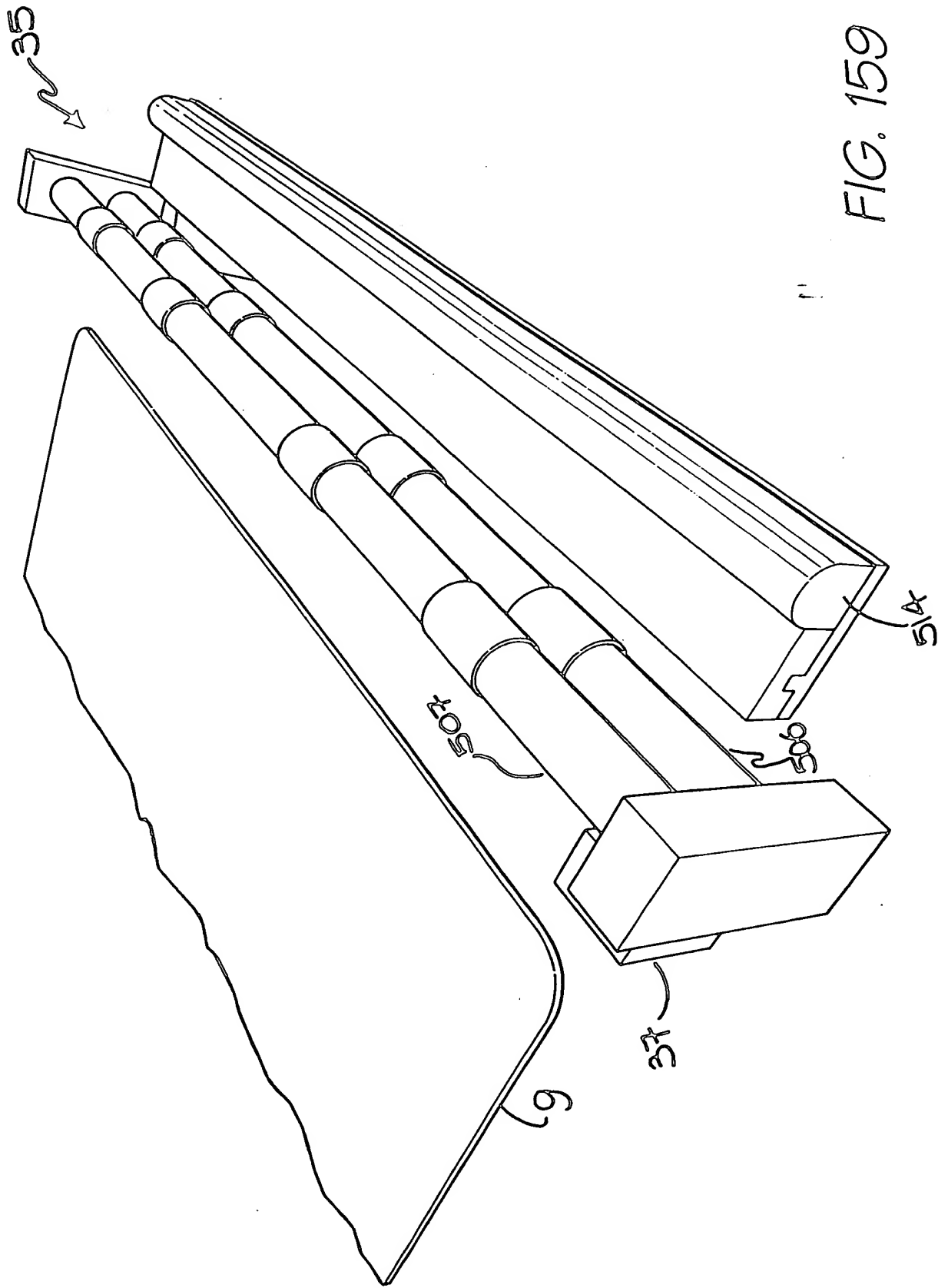


FIG. 158



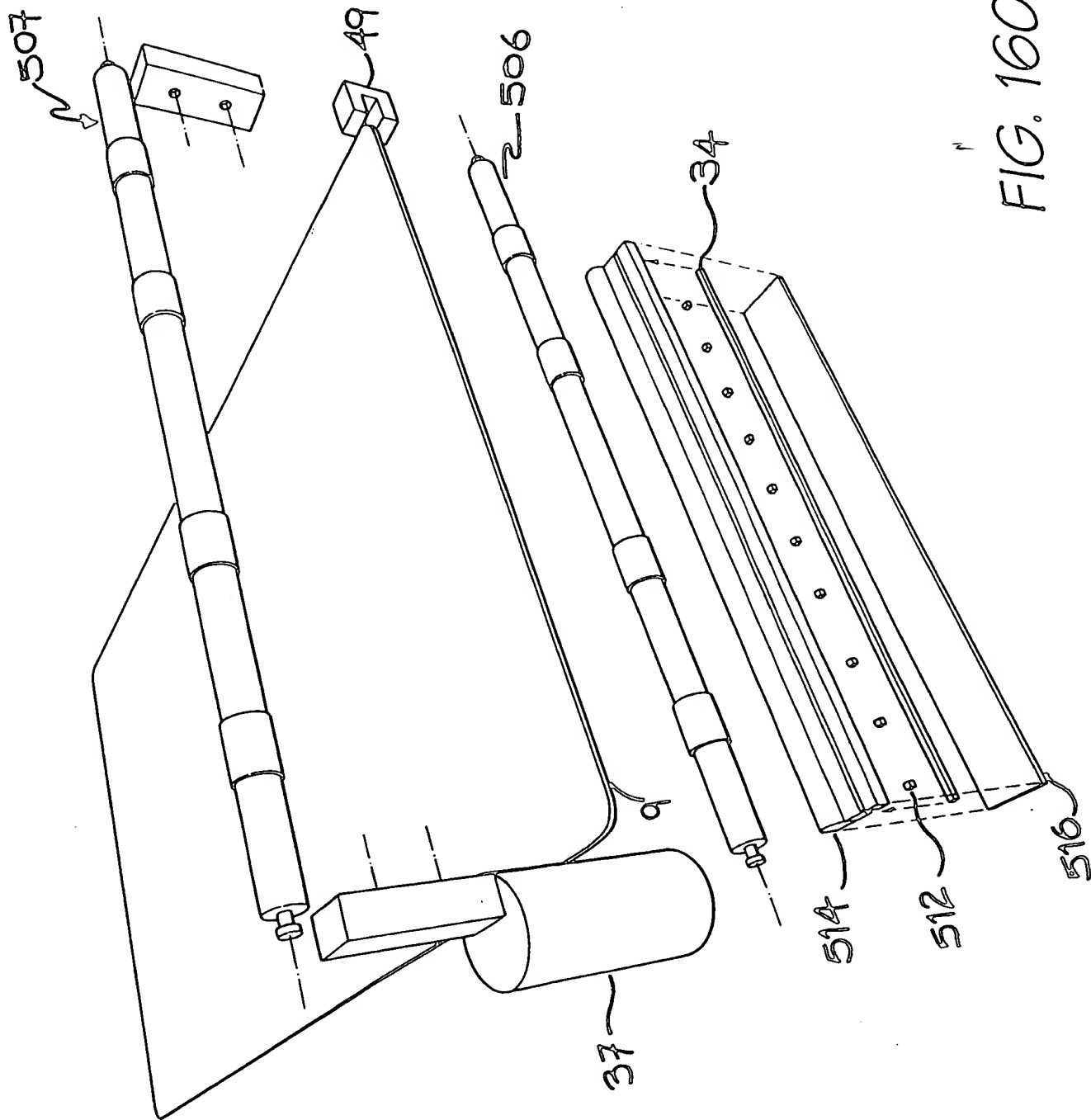


FIG. 160

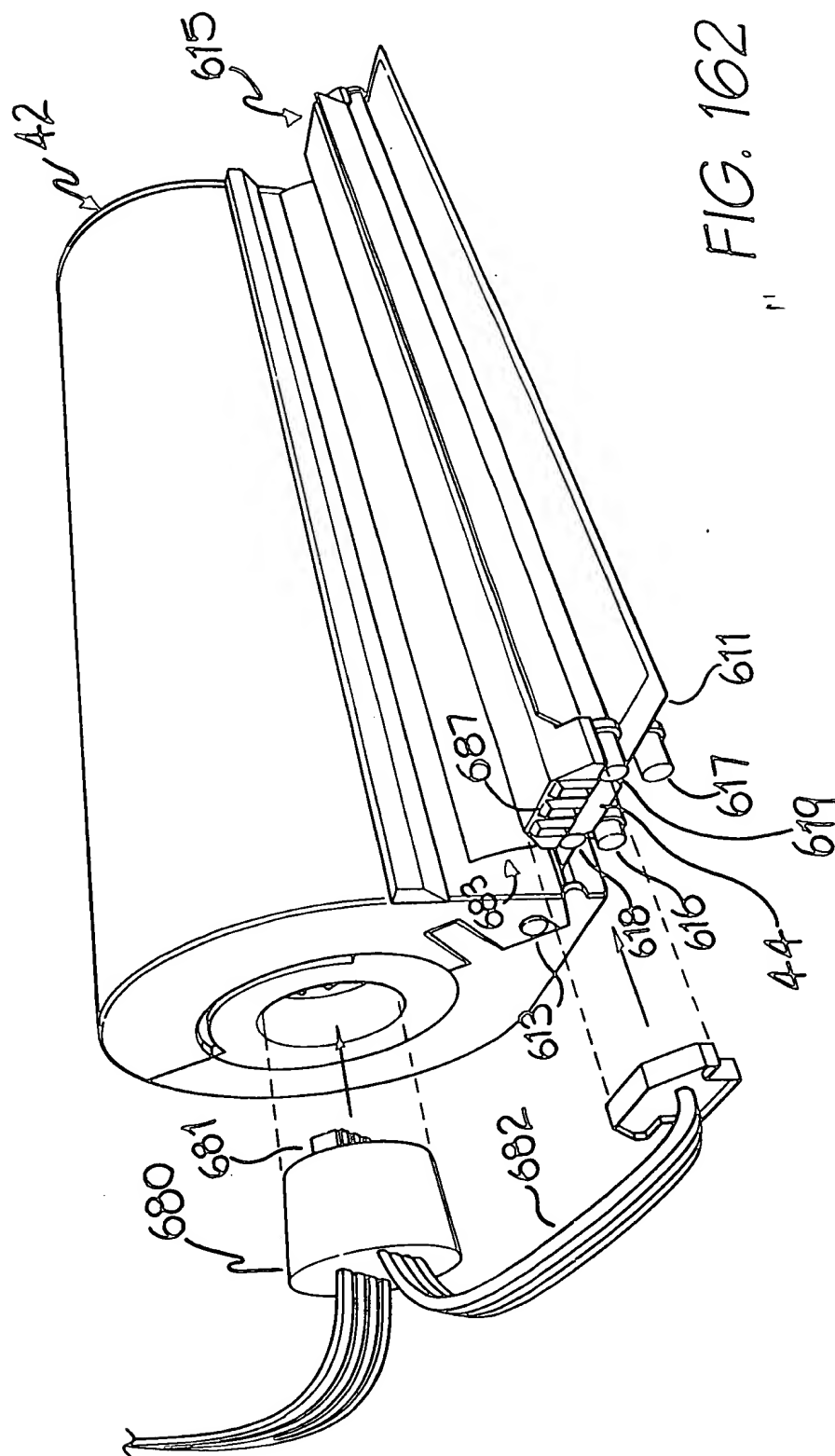


FIG. 162

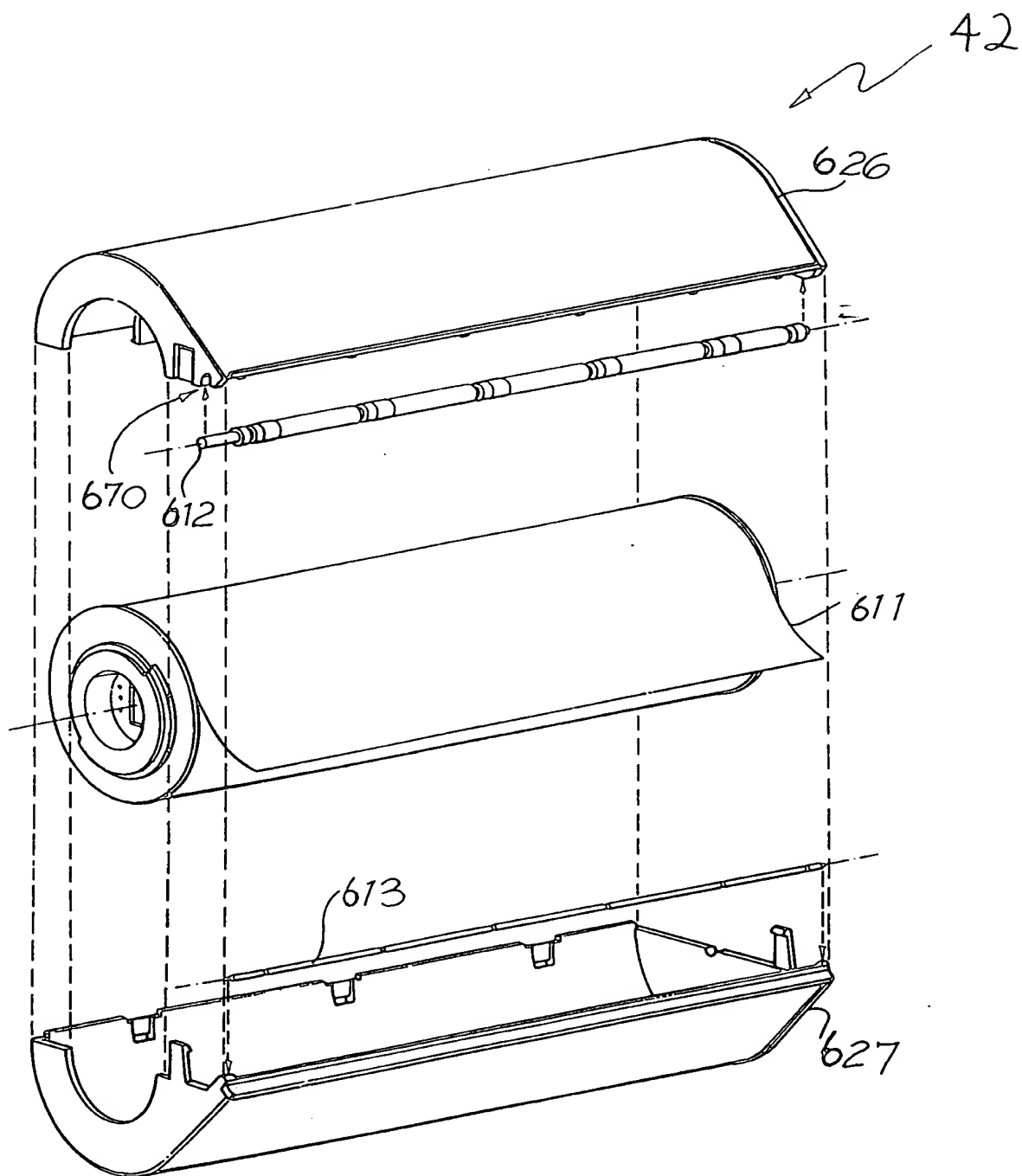


FIG. 163

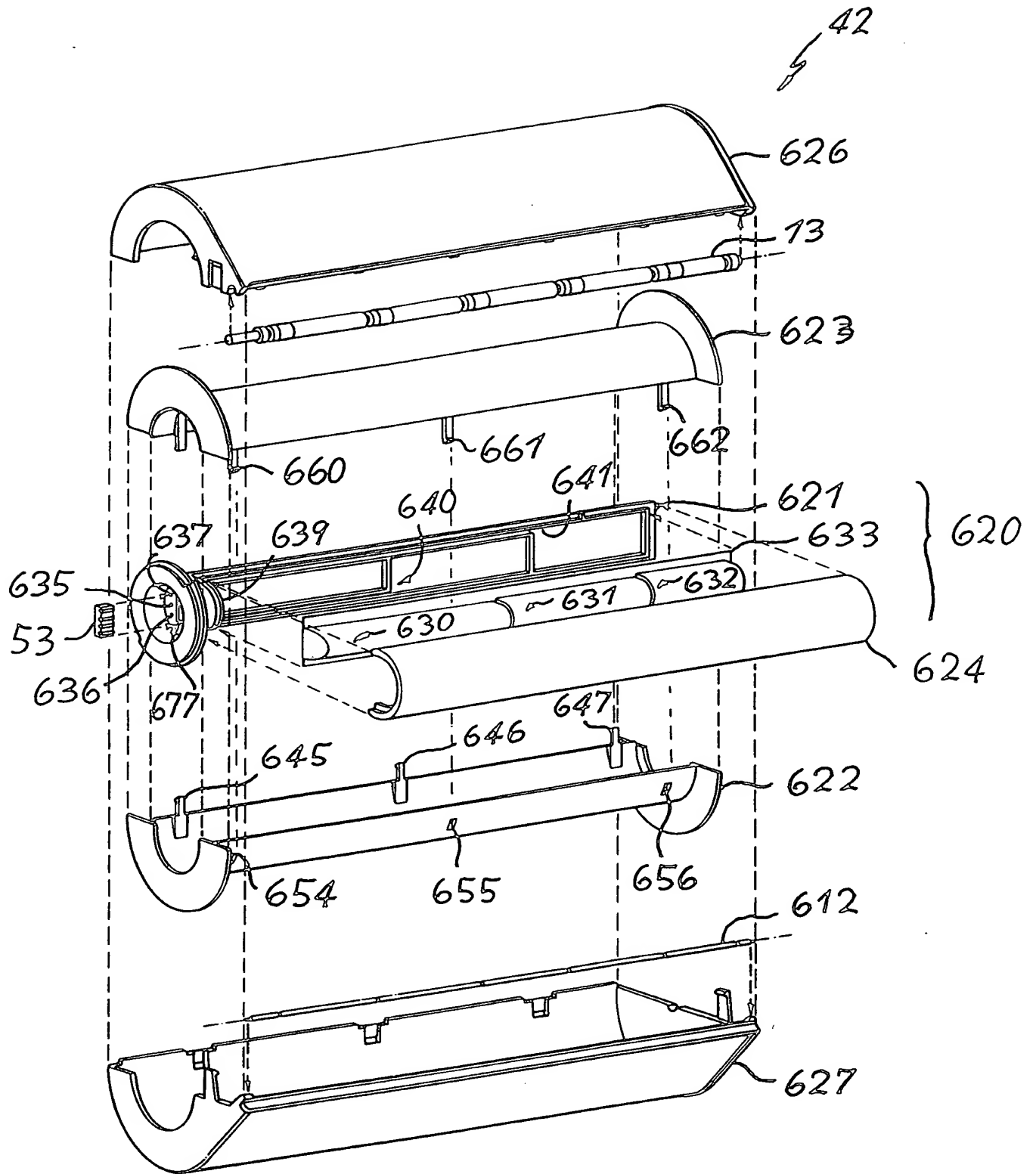


FIG. 164

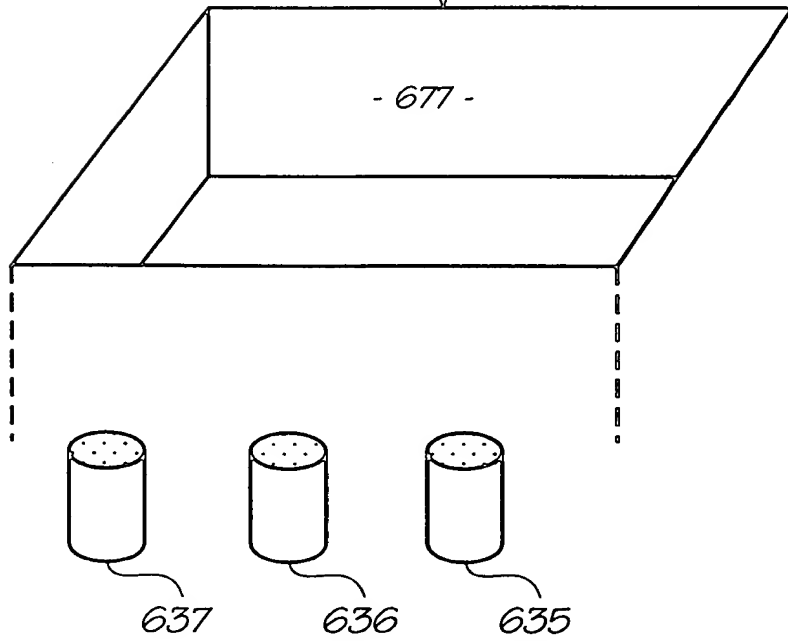
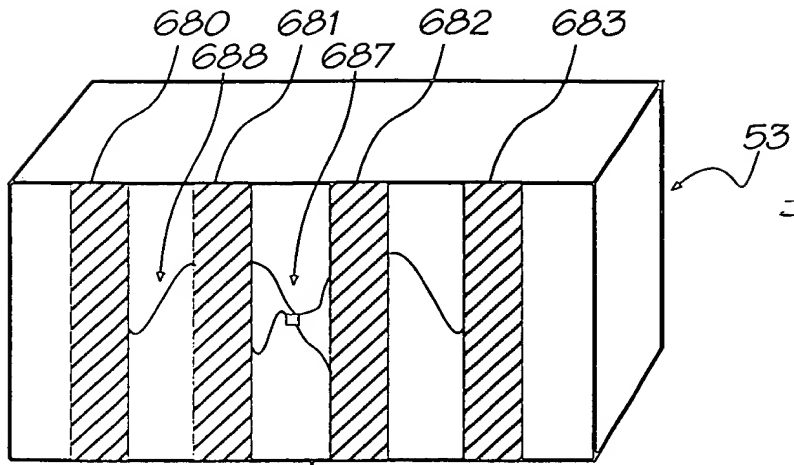


FIG. 165

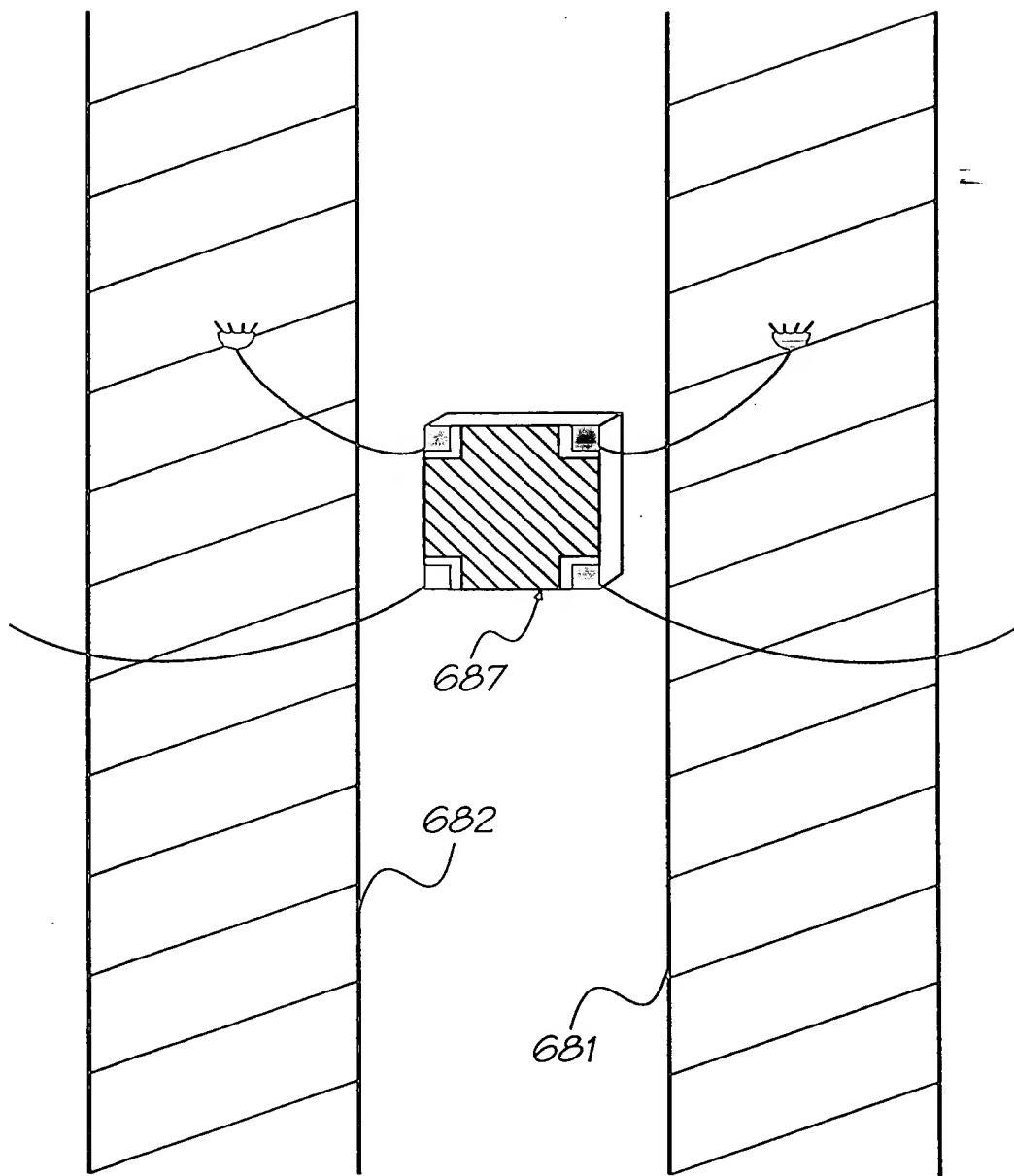


FIG. 166

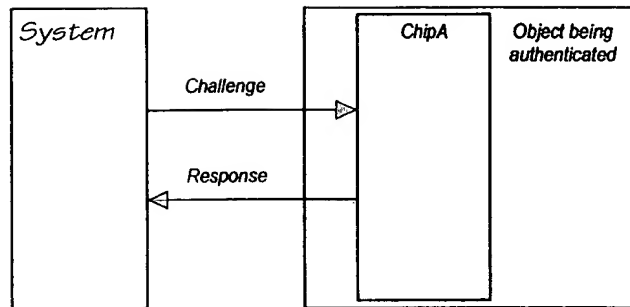


FIG. 167

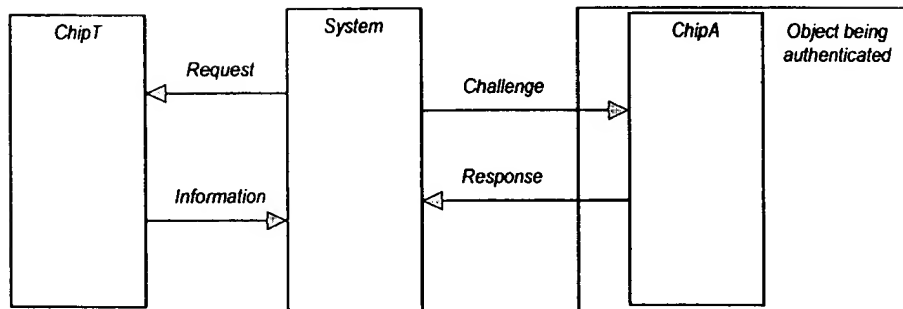


FIG. 168

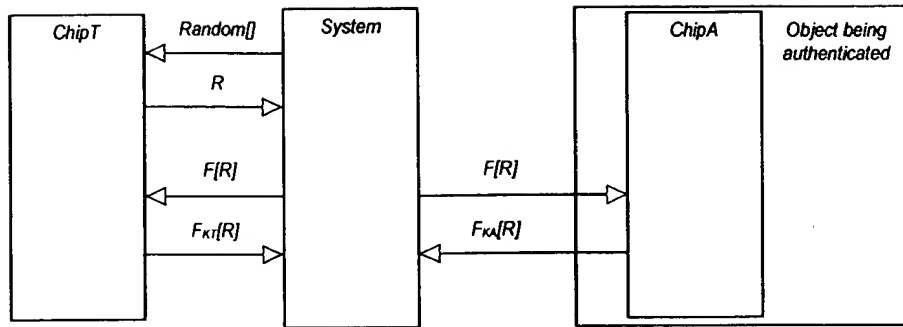


FIG. 169

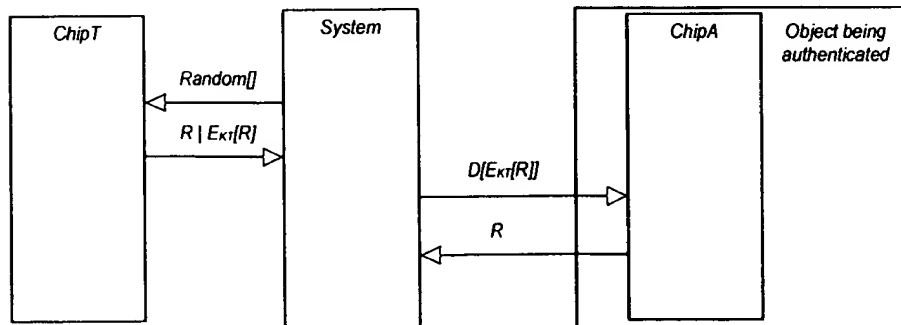


FIG. 170

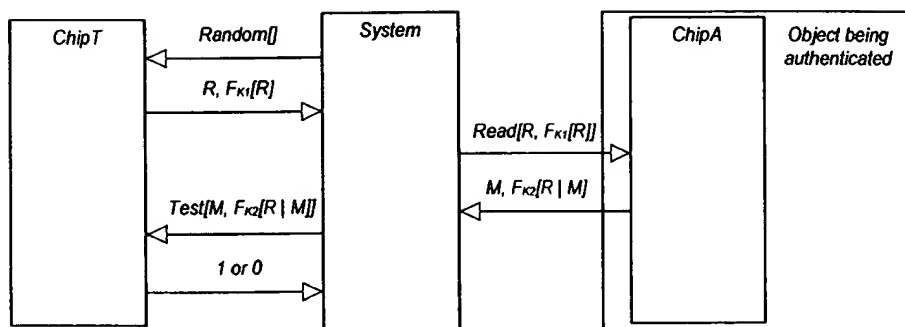


FIG. 171

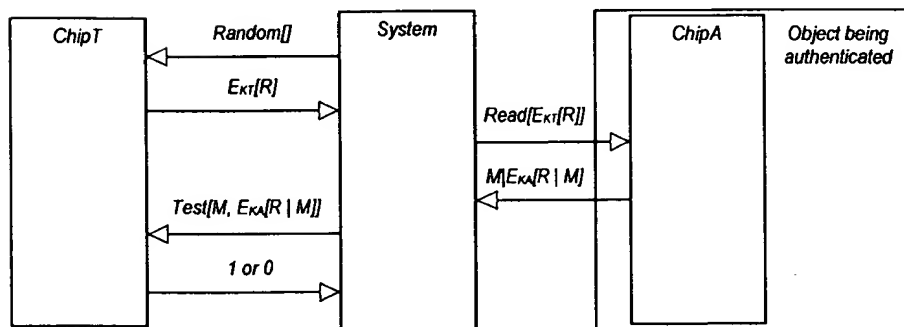


FIG. 172

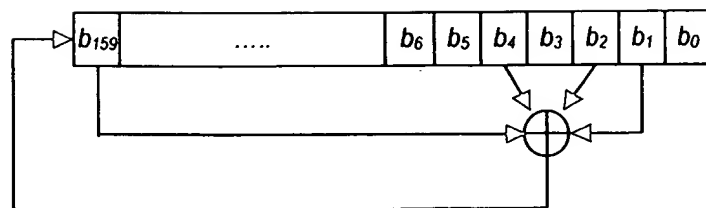


FIG. 173

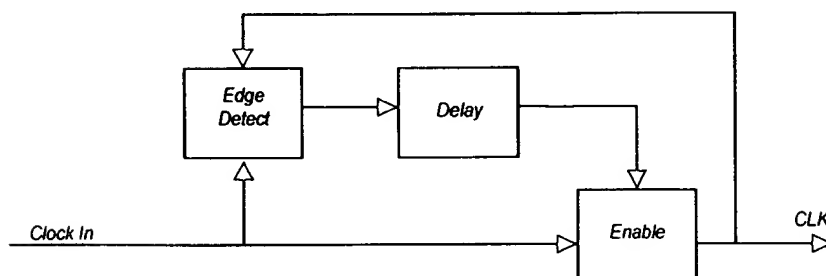


FIG. 174

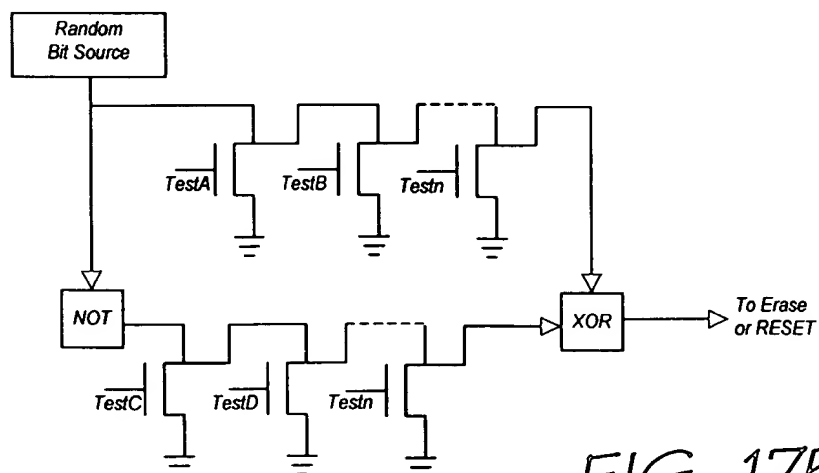


FIG. 175

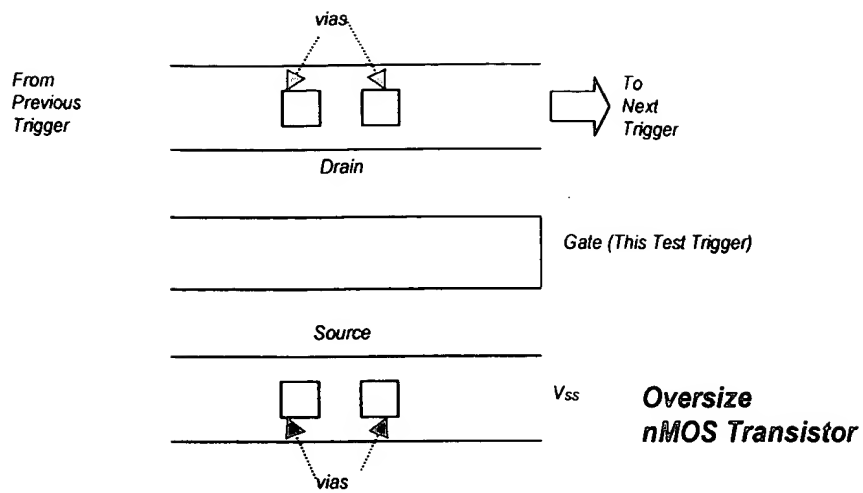


FIG. 176

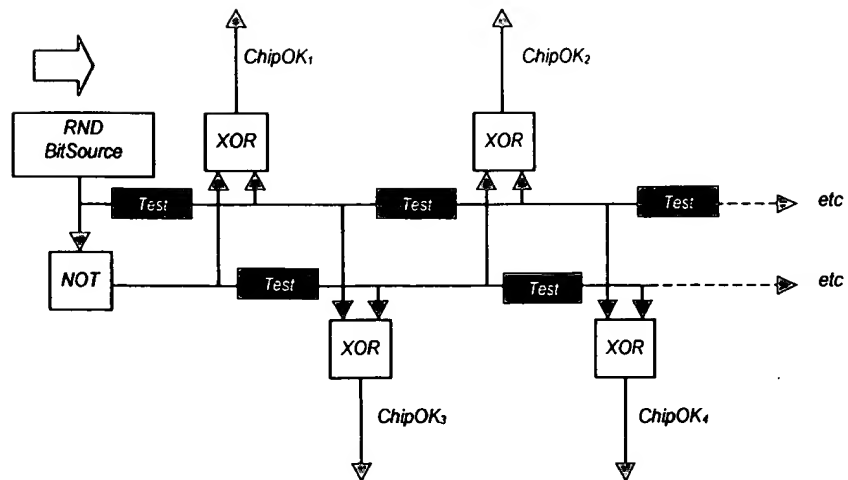


FIG. 177

09112786 071098

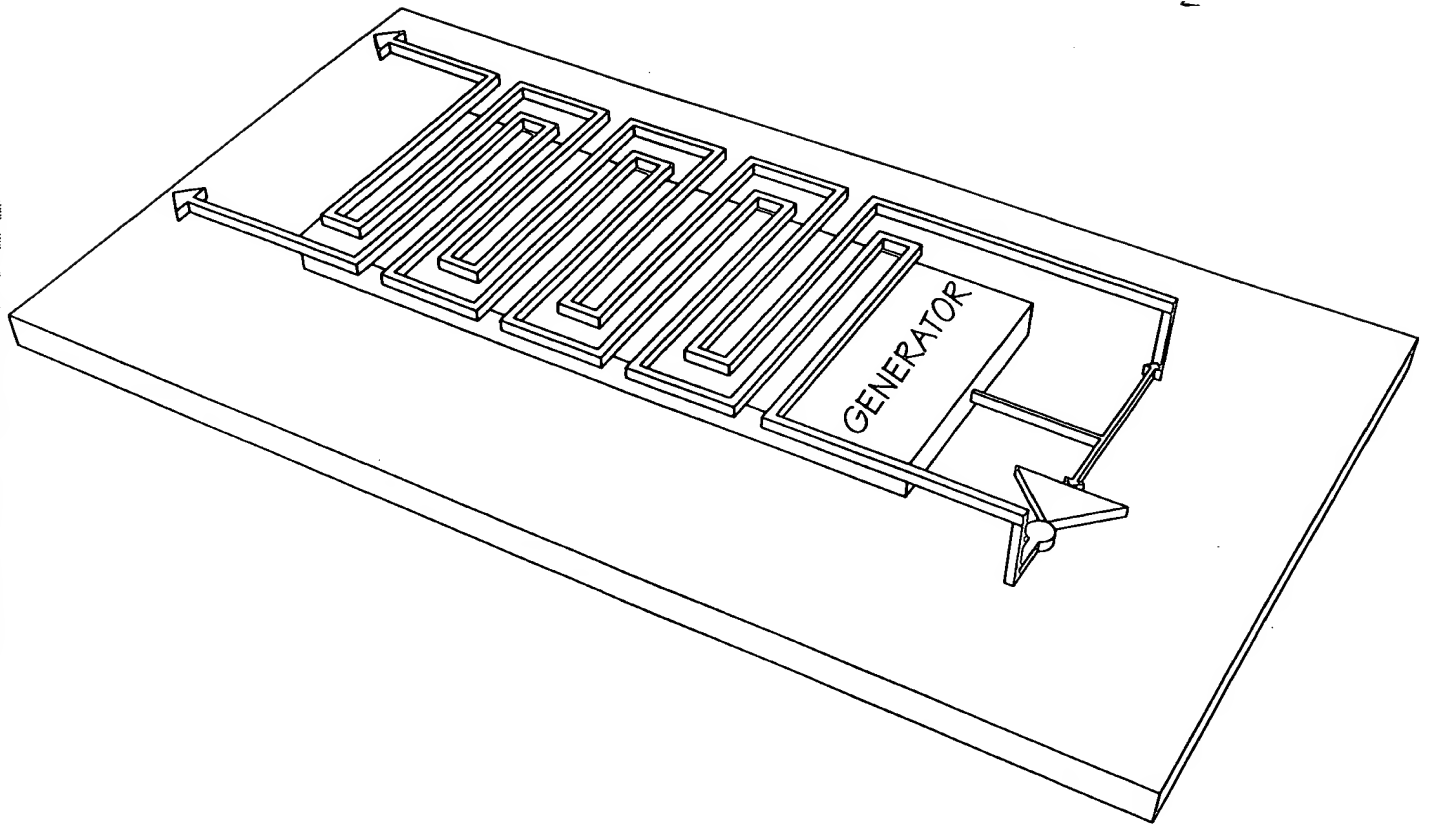


FIG. 178

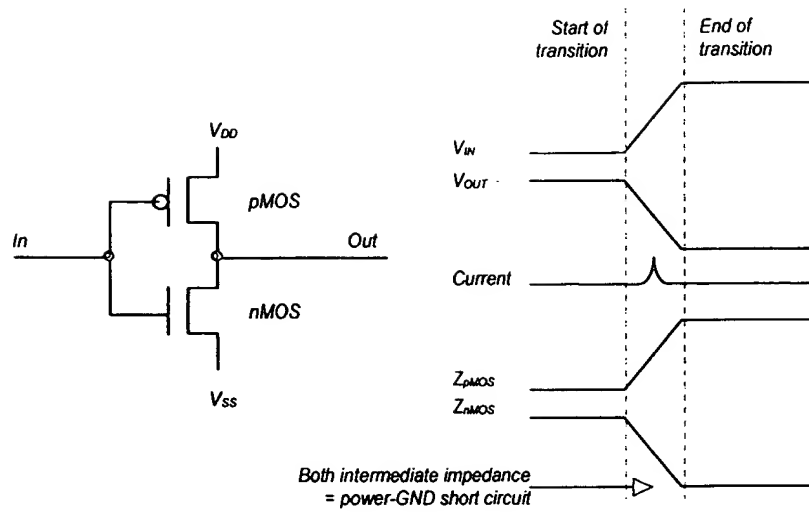


FIG. 179

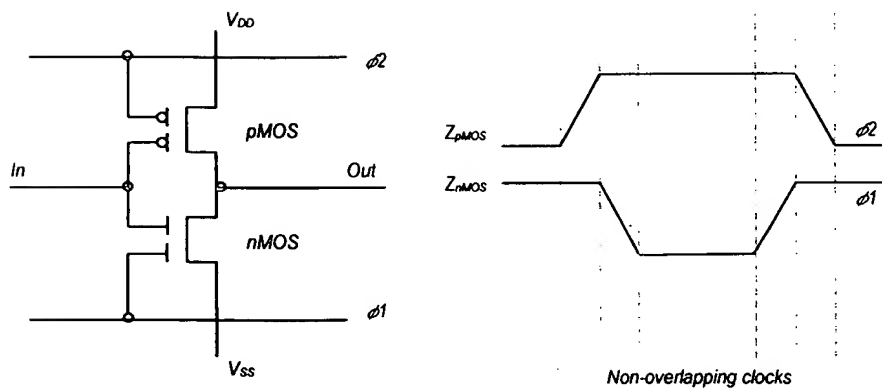


FIG. 180

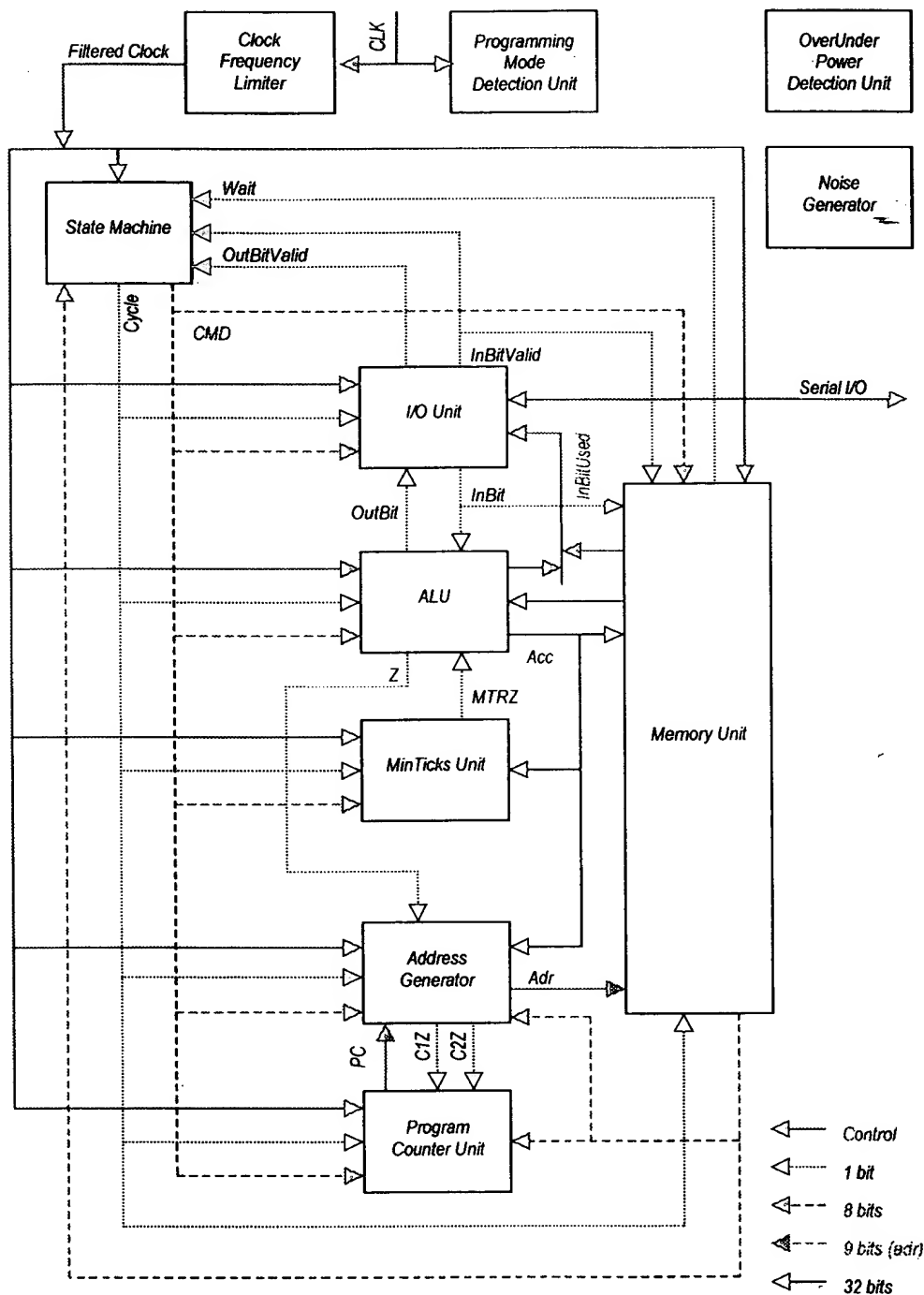


FIG. 181

The diagram illustrates a memory map with the following components:

- Start Address:** 0 0000 0000
- Constants (16):** A block of 16 units at the top.
- Reserved (48):** A block of 48 units, indicated by a dashed line.
- RAM (32):** A block of 32 units.
- Flash (32):** A block of 32 units.
- Program (384):** A large block at the bottom, labeled vertically.
- Address Ranges:**
 - 0 0001 0000
 - 0 0100 0000
 - 0 0110 0000
 - 0 1000 0000
 - 1 1111 1111
- Data Entry Sizes:**
 - 32-bit data entries:** Indicated by a bracket covering the Constants, Reserved, RAM, and Flash blocks.
 - 8-bit data entries:** Indicated by a bracket covering the Program block.

FIG. 182

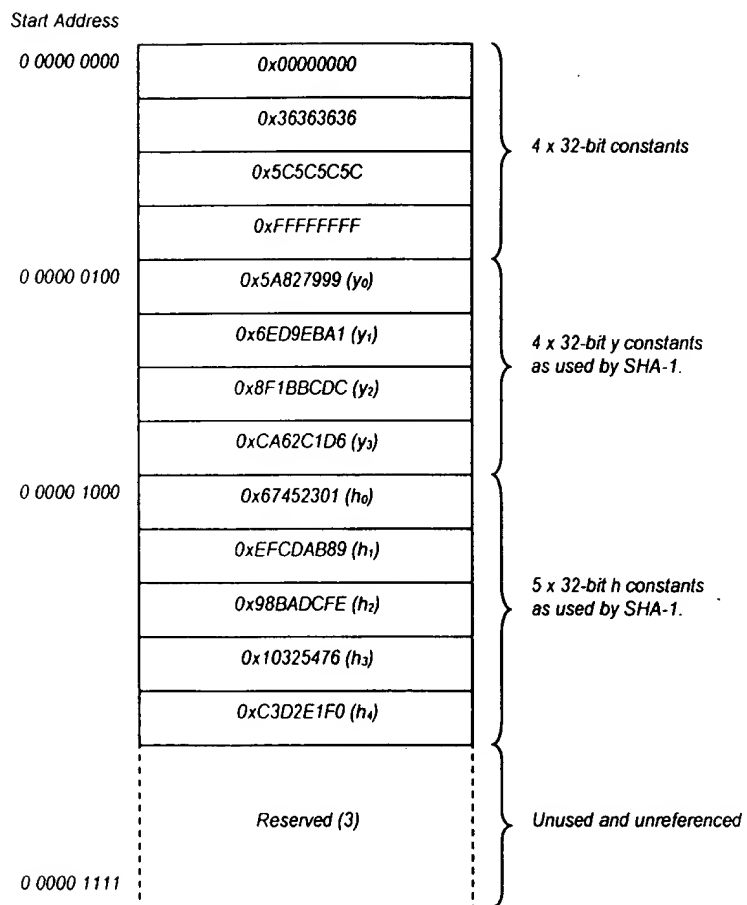


FIG. 183

0942786-07408

Start Address

0 0100 0000

E
D
C
B
A
T
H ₄
H ₃
H ₂
H ₁
H ₀
B160 ₄
B160 ₃
B160 ₂
B160 ₁
B160 ₀

A-E

Temp

H₀₋₄

B160₀₋₄

Start Address

0 0101 0000

X ₁₅
X ₁₄
X ₁₃
X ₁₂
X ₁₁
X ₁₀
X ₉
X ₈
X ₇
X ₆
X ₅
X ₄
X ₃
X ₂
X ₁
X ₀

X₀₋₁₅

FIG. 184

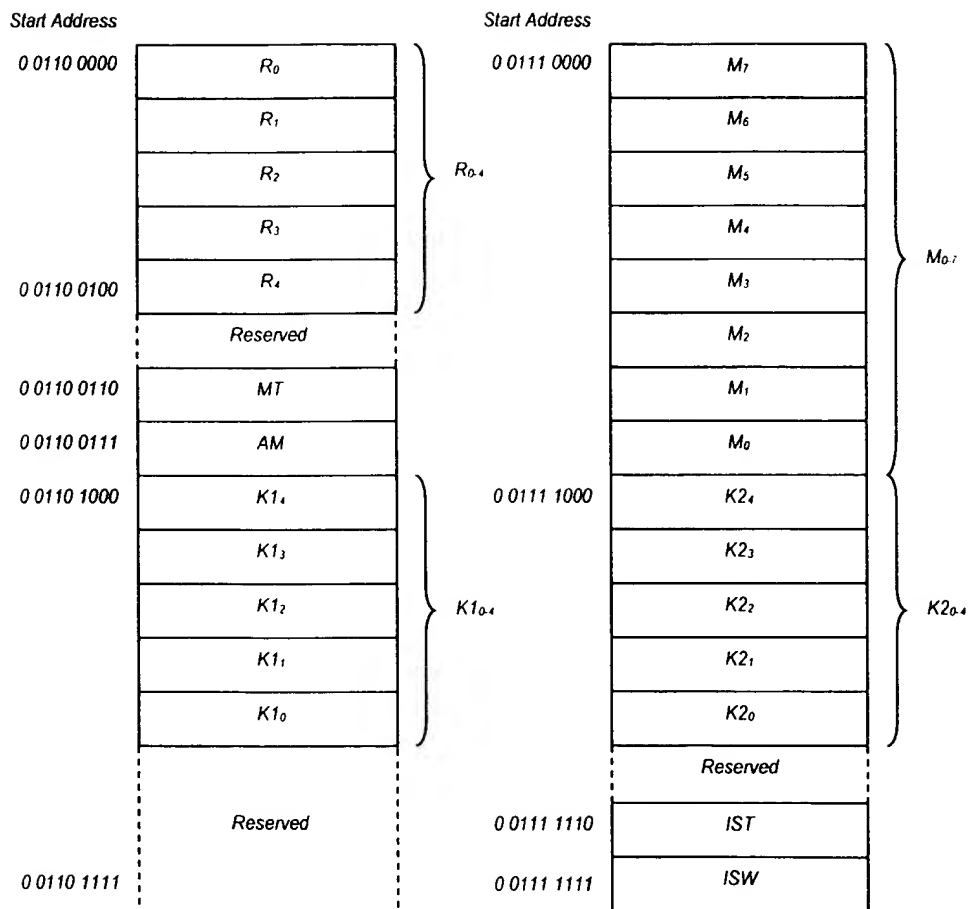


FIG. 185

0344386-071098

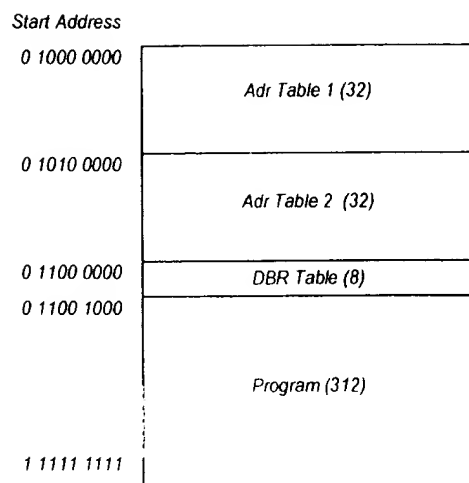


FIG. 186

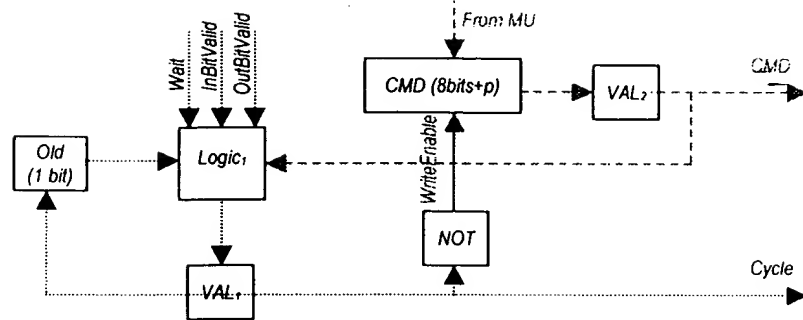


FIG. 187

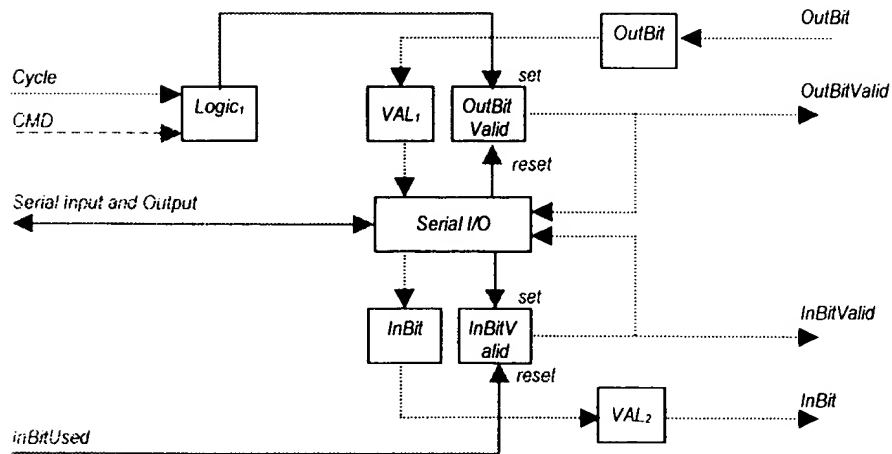


FIG. 188

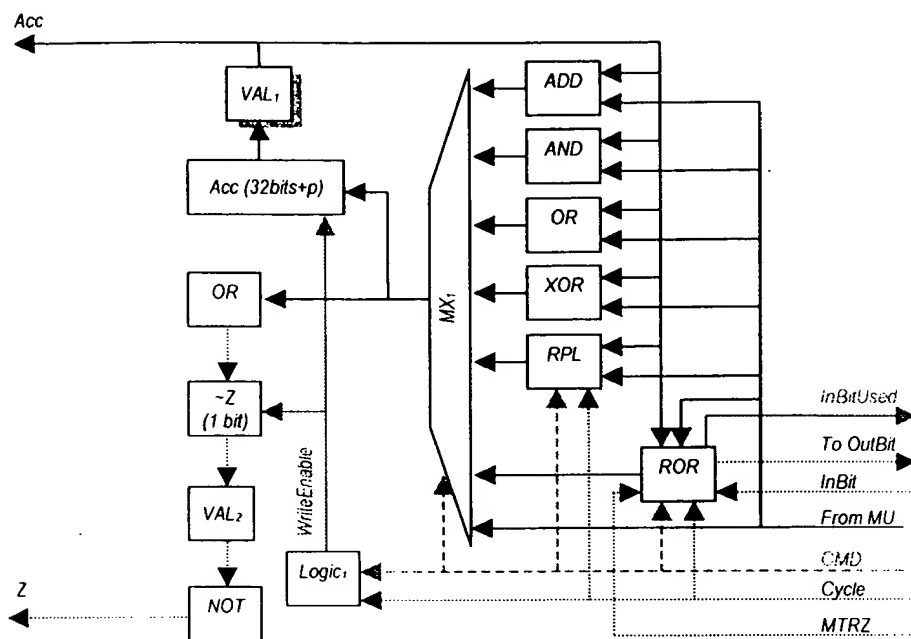


FIG. 189

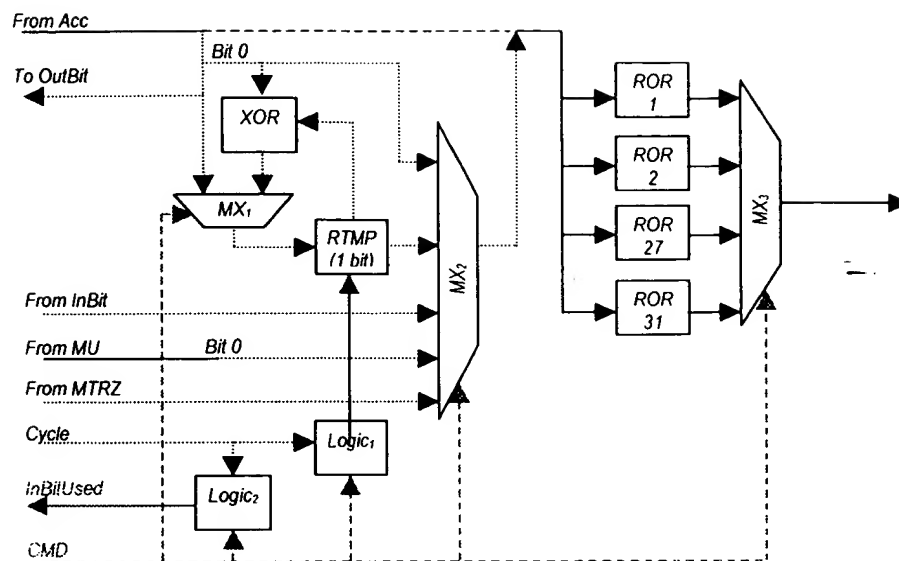


FIG. 190

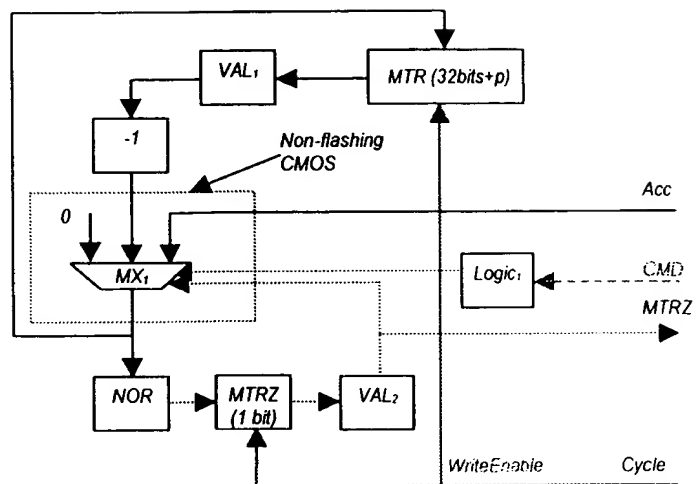


FIG. 191

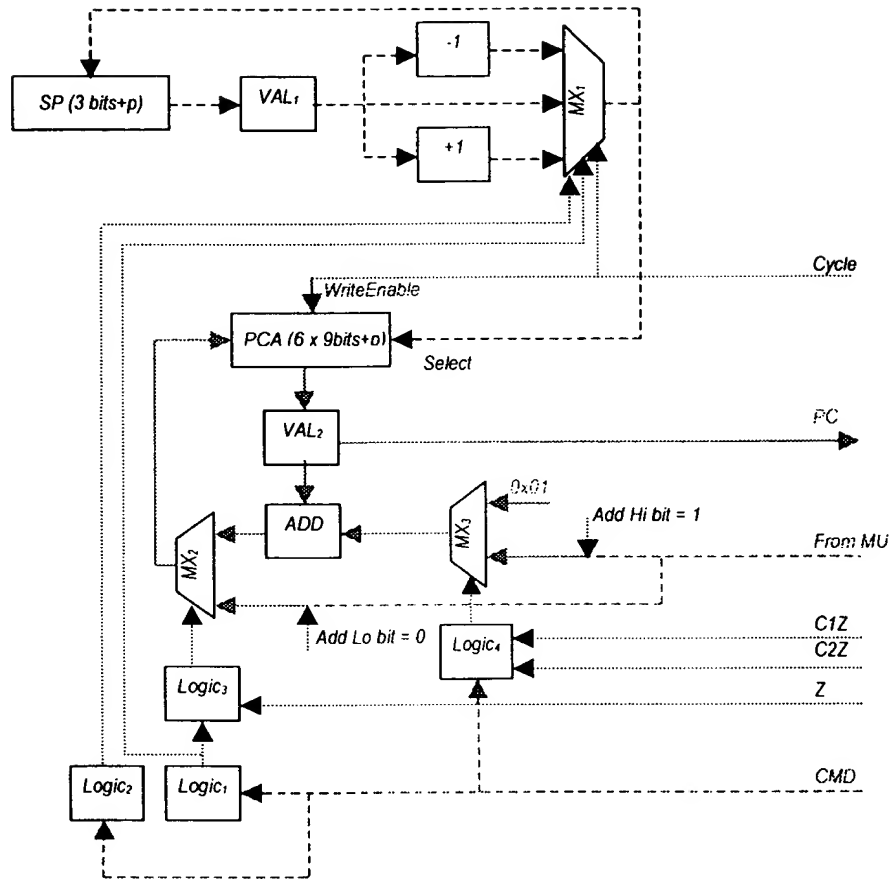


FIG. 192

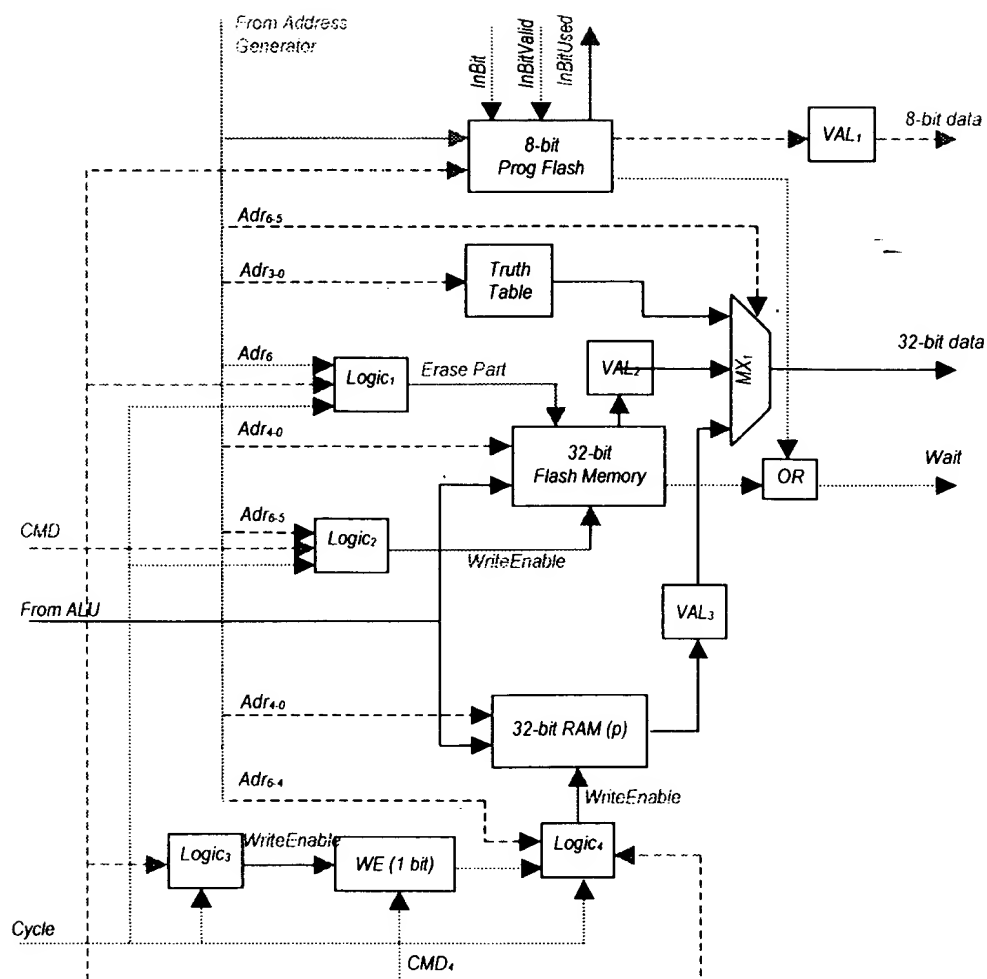


FIG. 193

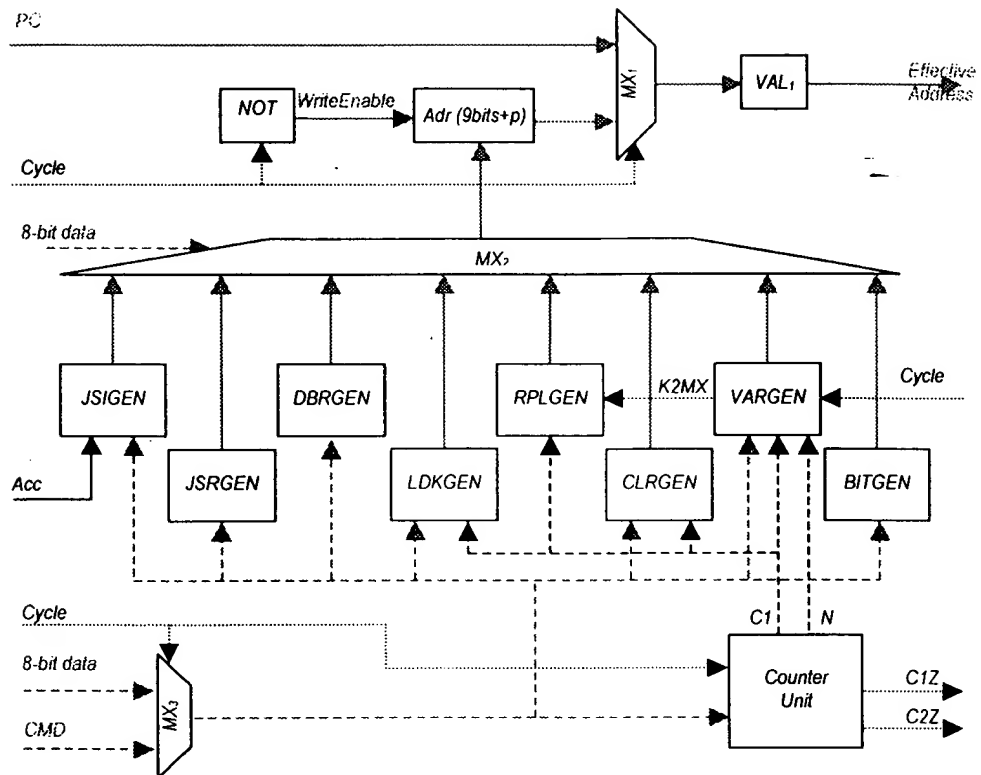
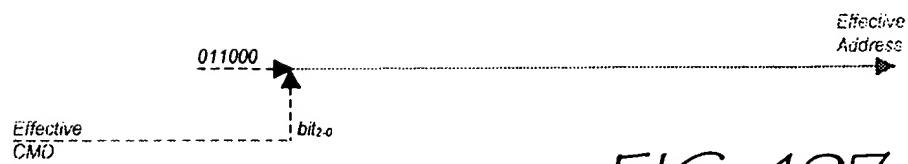
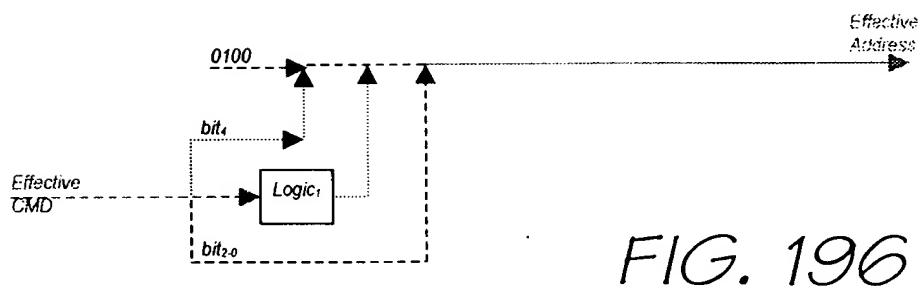
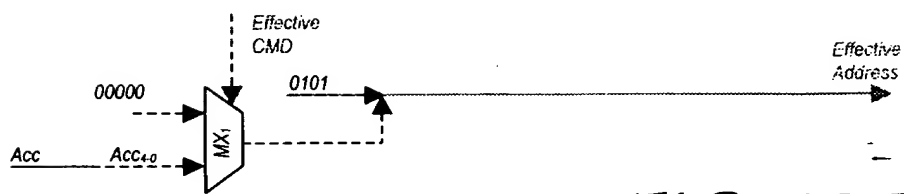


FIG. 194



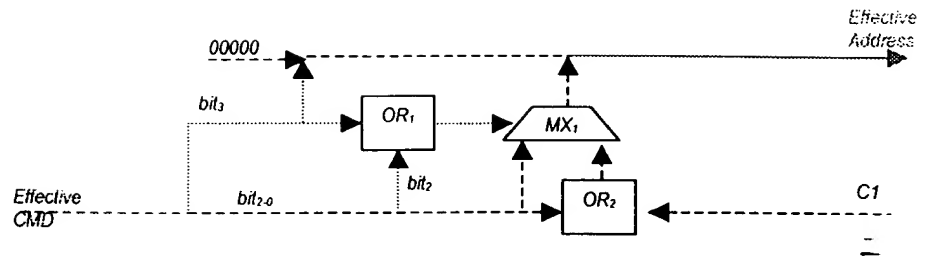


FIG. 198

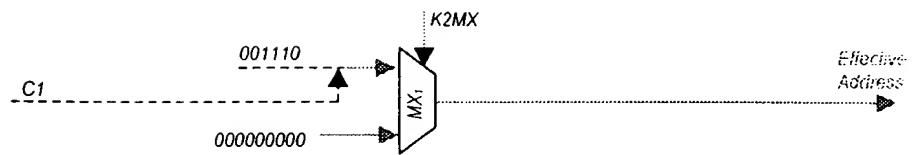


FIG. 199

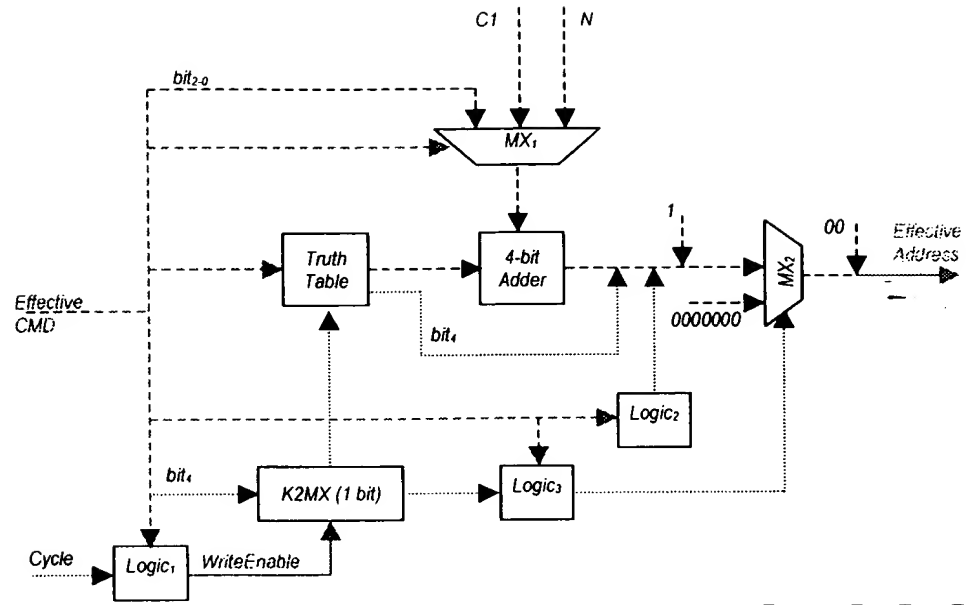


FIG. 200

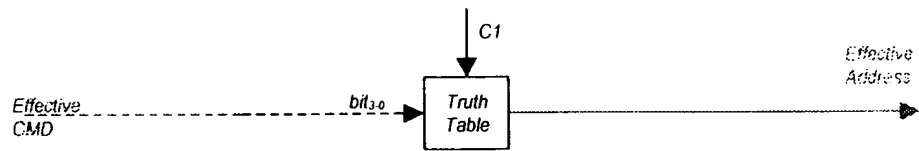


FIG. 201

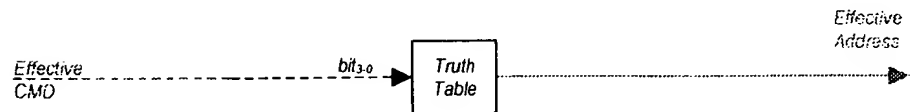


FIG. 202

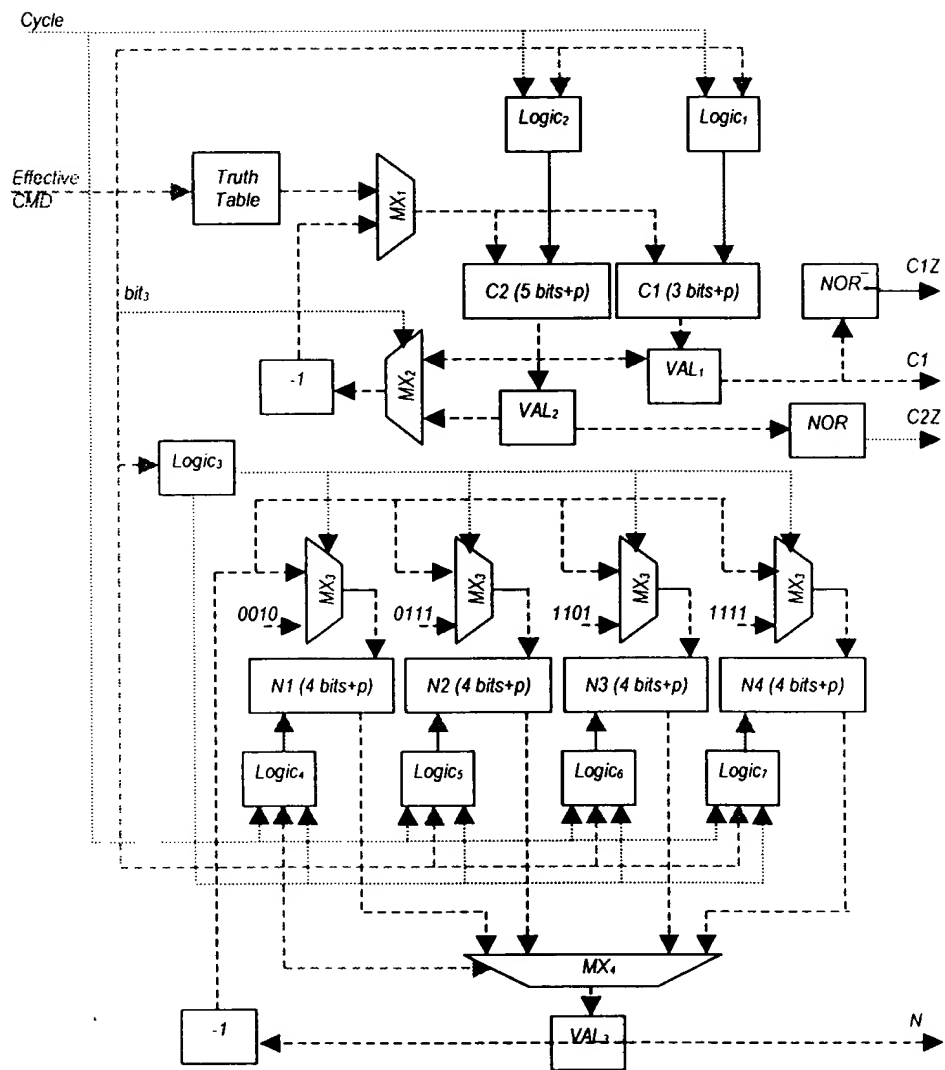
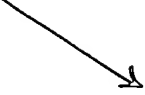


FIG. 203

705



Data Type	Bits
Factory code	16
Batch number	32
Serial number	48
Manufacturing date	16
Media length	24
Media type	8
Preprinted media length	16
Cyan ink viscosity	8
Magenta ink viscosity	8
Yellow ink viscosity	8
Cyan drop volume	8
Magenta drop volume	8
Yellow drop volume	8
Cyan ink color	24
Magenta ink color	24
Yellow ink color	24
Remaining-media length indicator	16
Authentication key	128
Copyrightable bit pattern	512
Reserved for camera use	88
Total	1024

728



FIG. 204

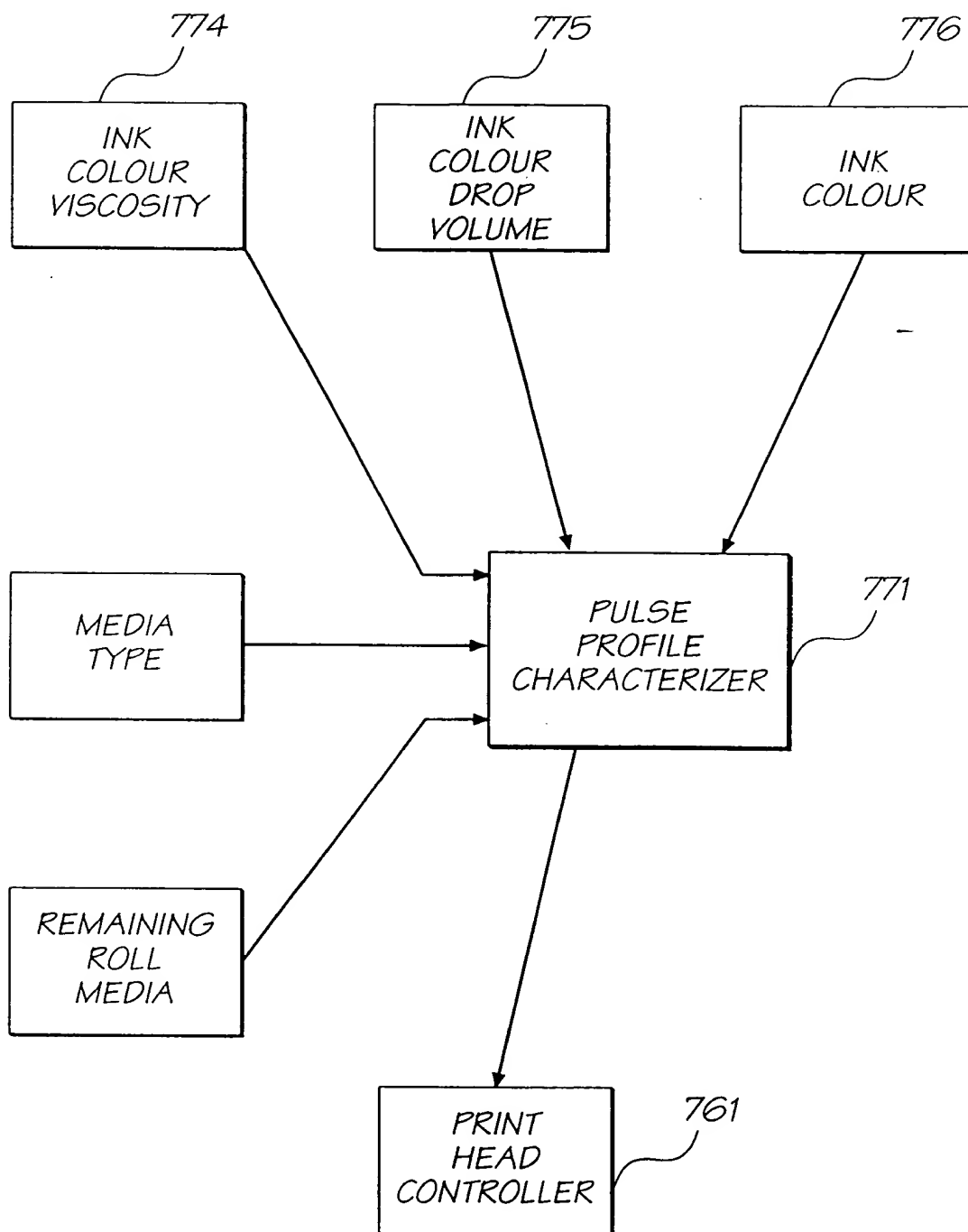


FIG. 205

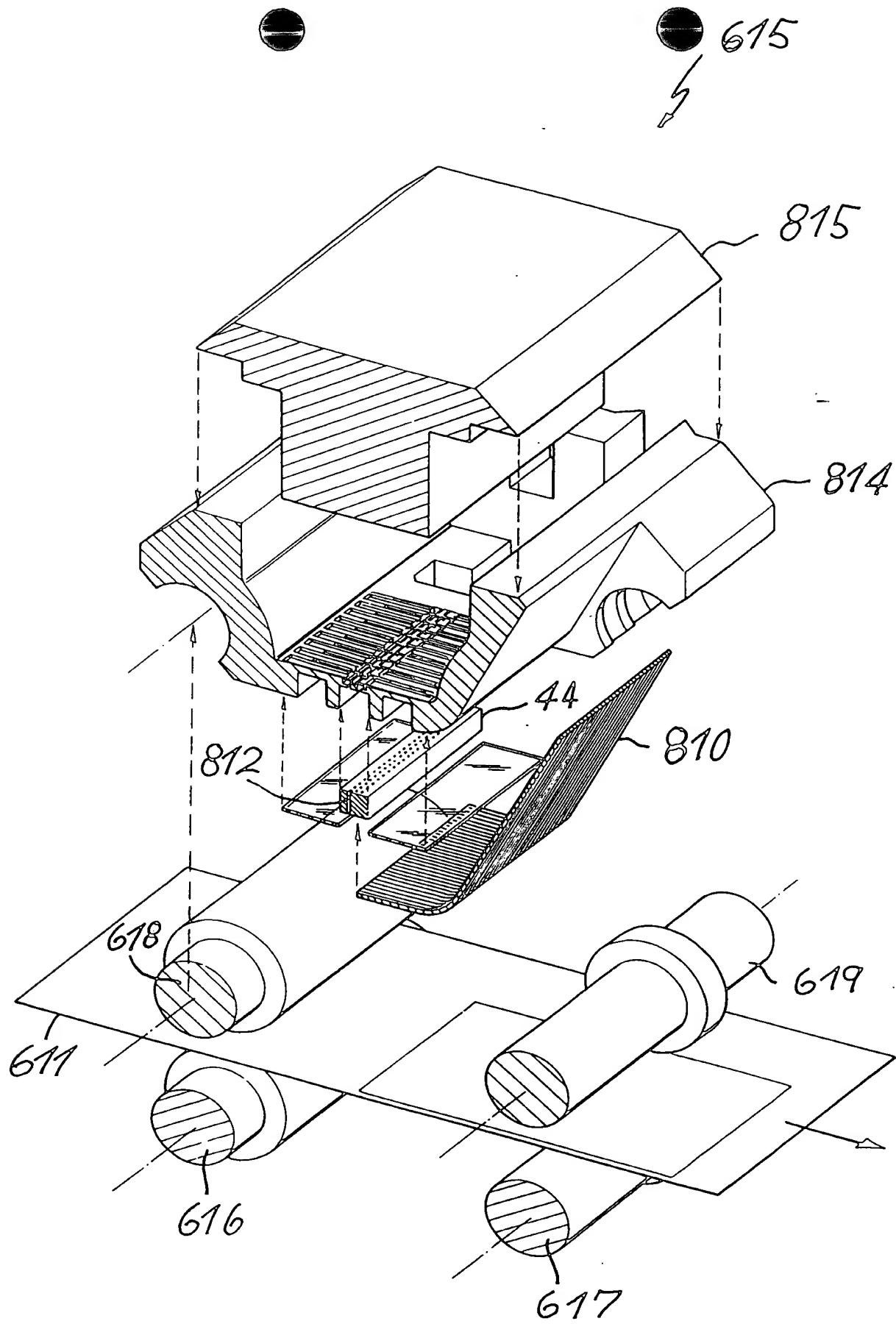


FIG. 206

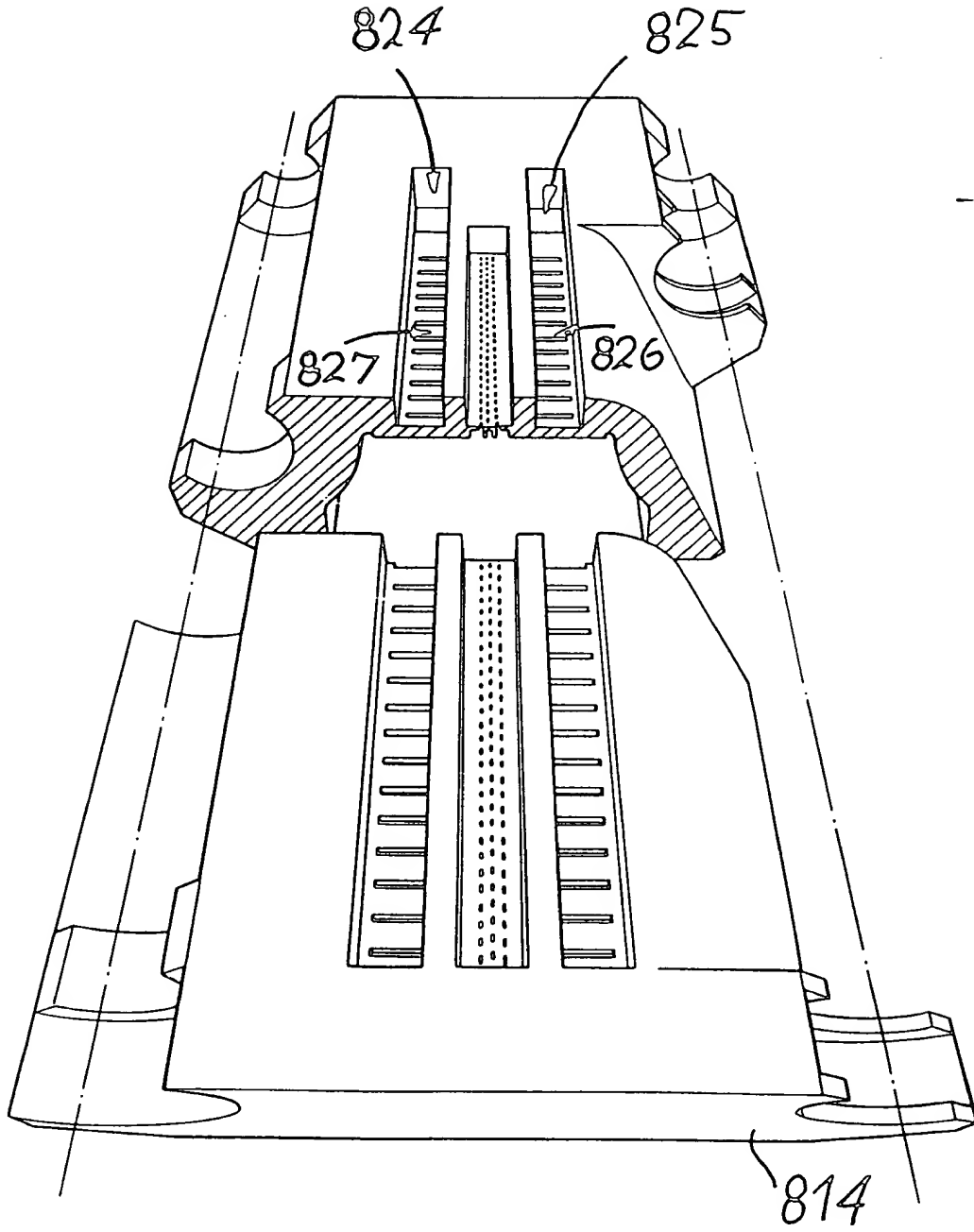


FIG. 207

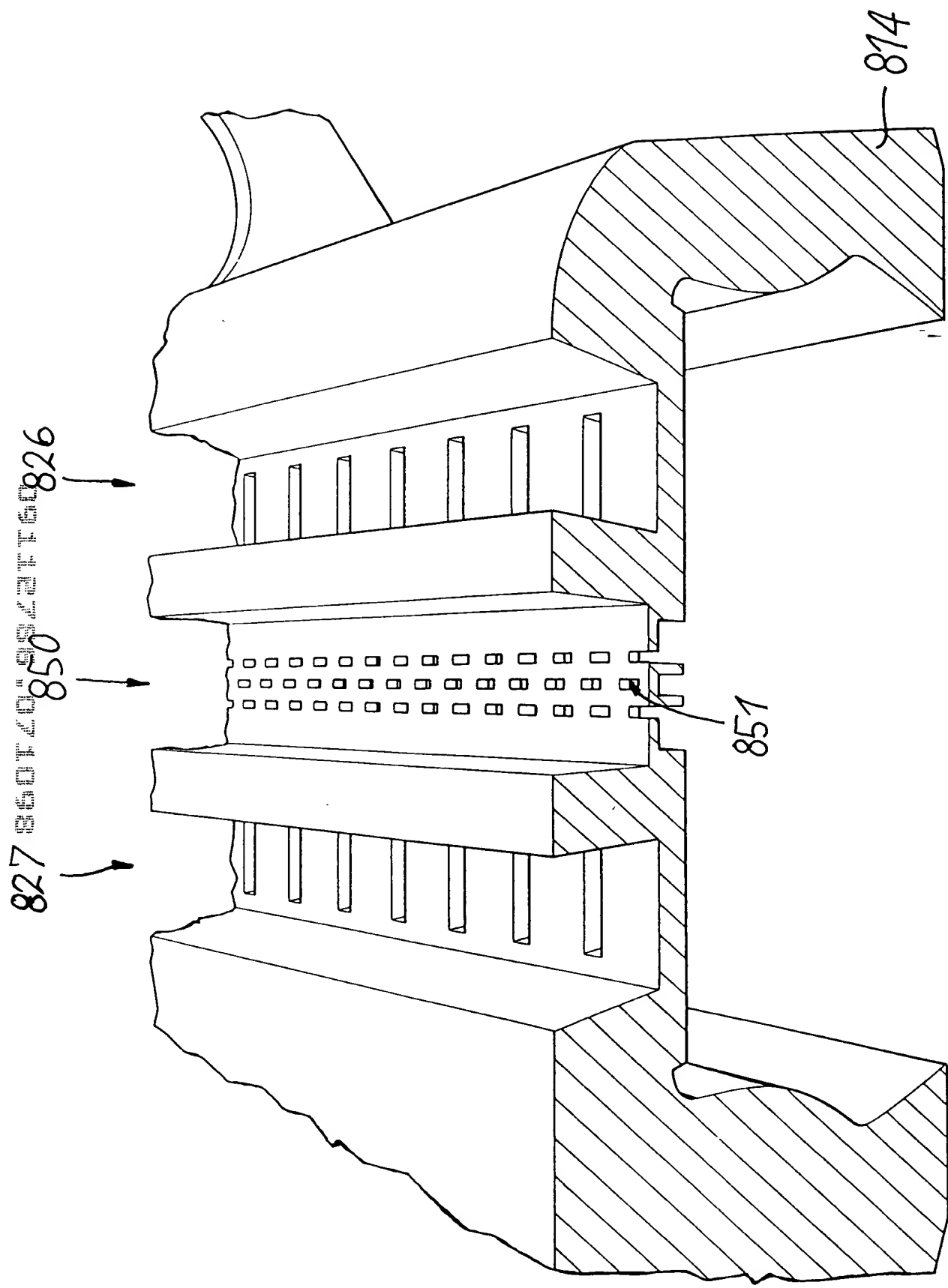


FIG. 208

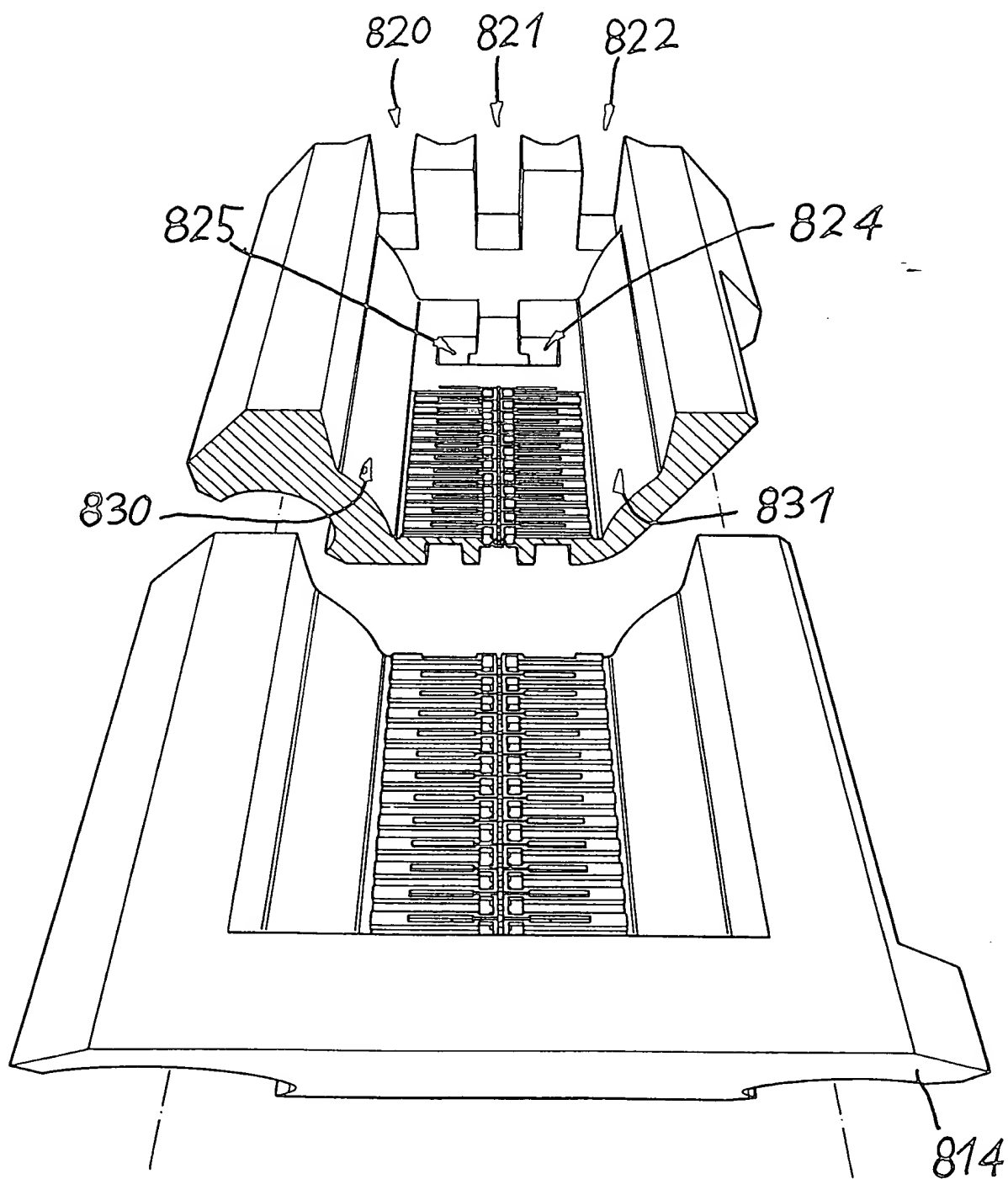


FIG. 209

SECTION 832

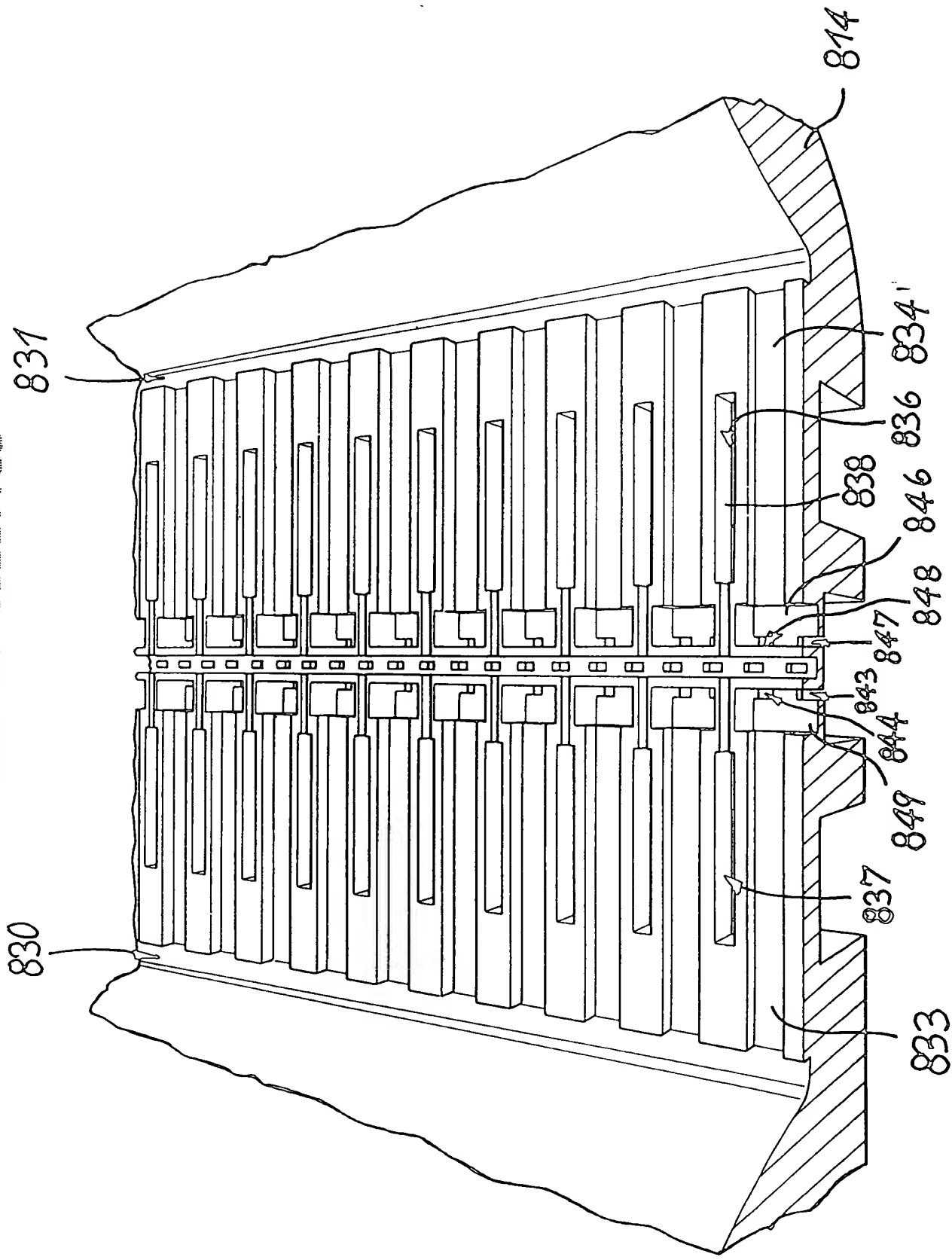


FIG. 210

870

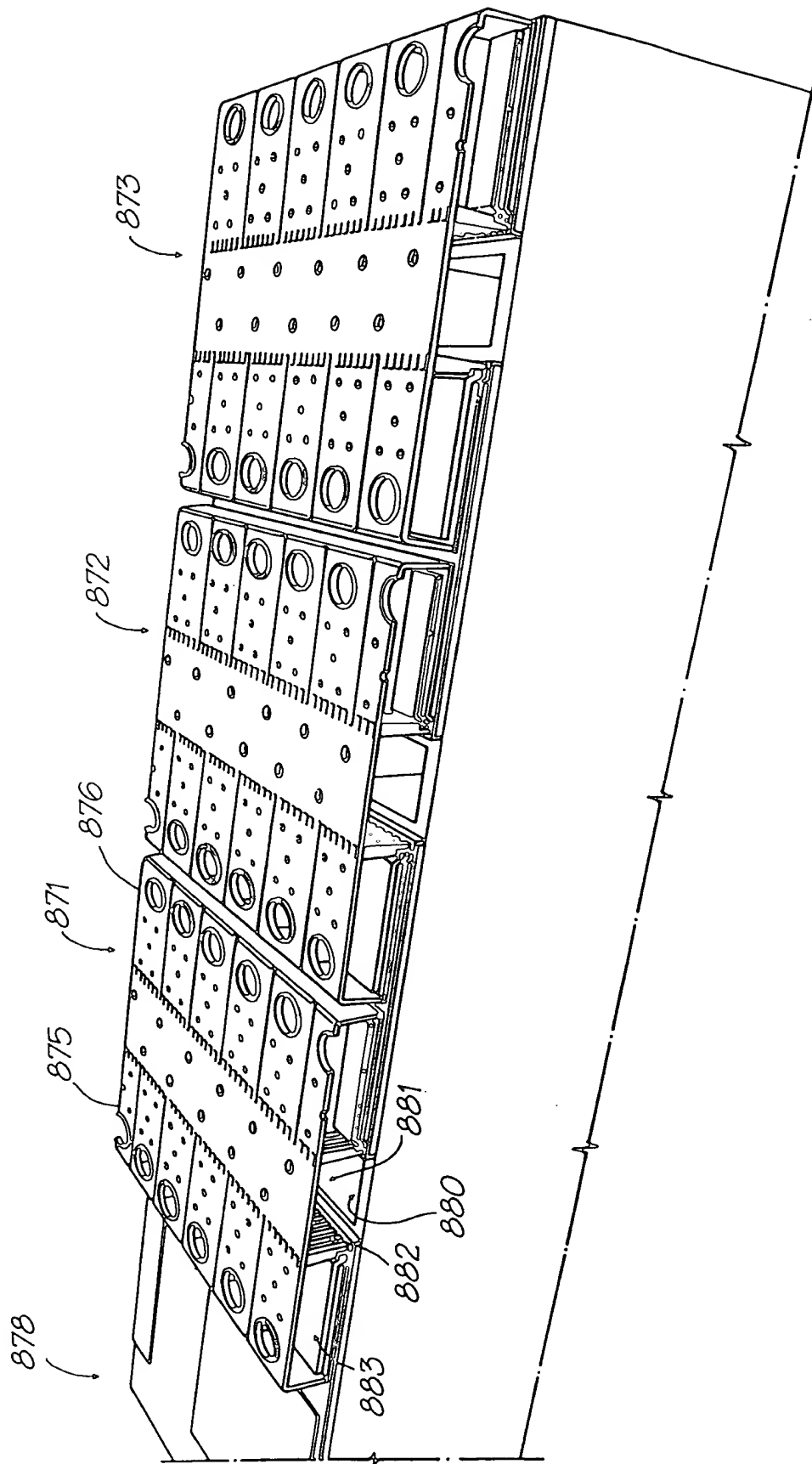


FIG. 211

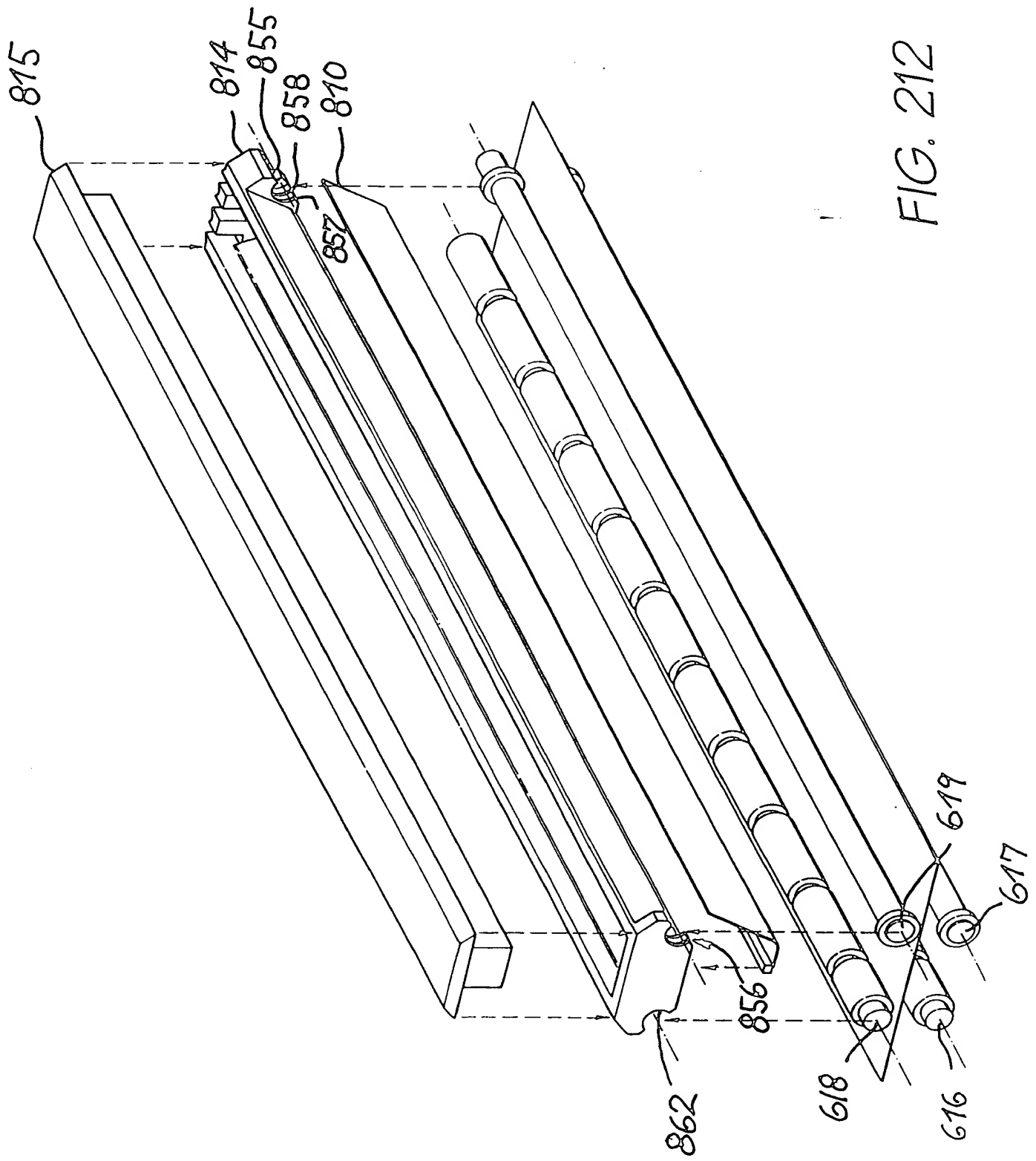


FIG. 212

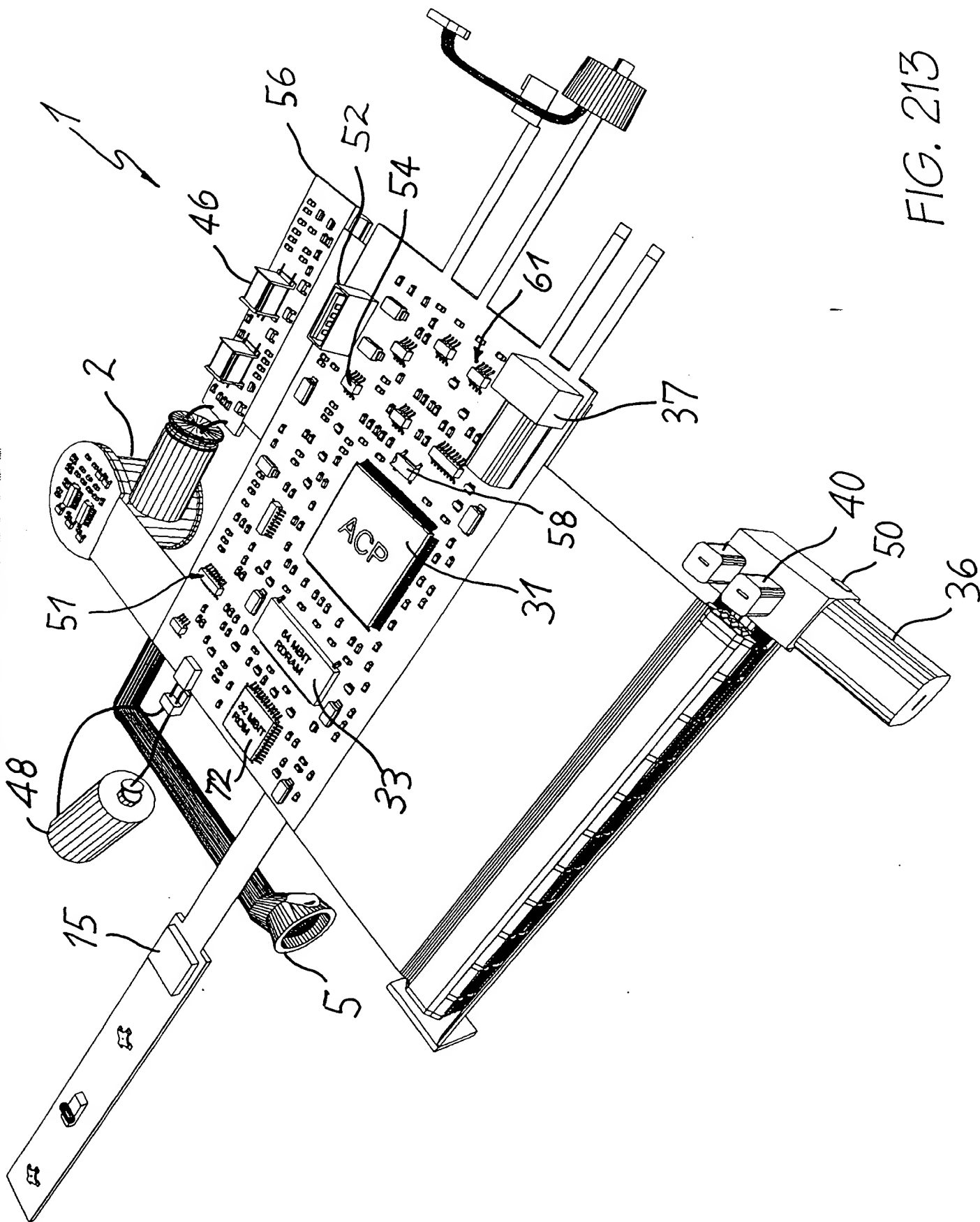


FIG. 213

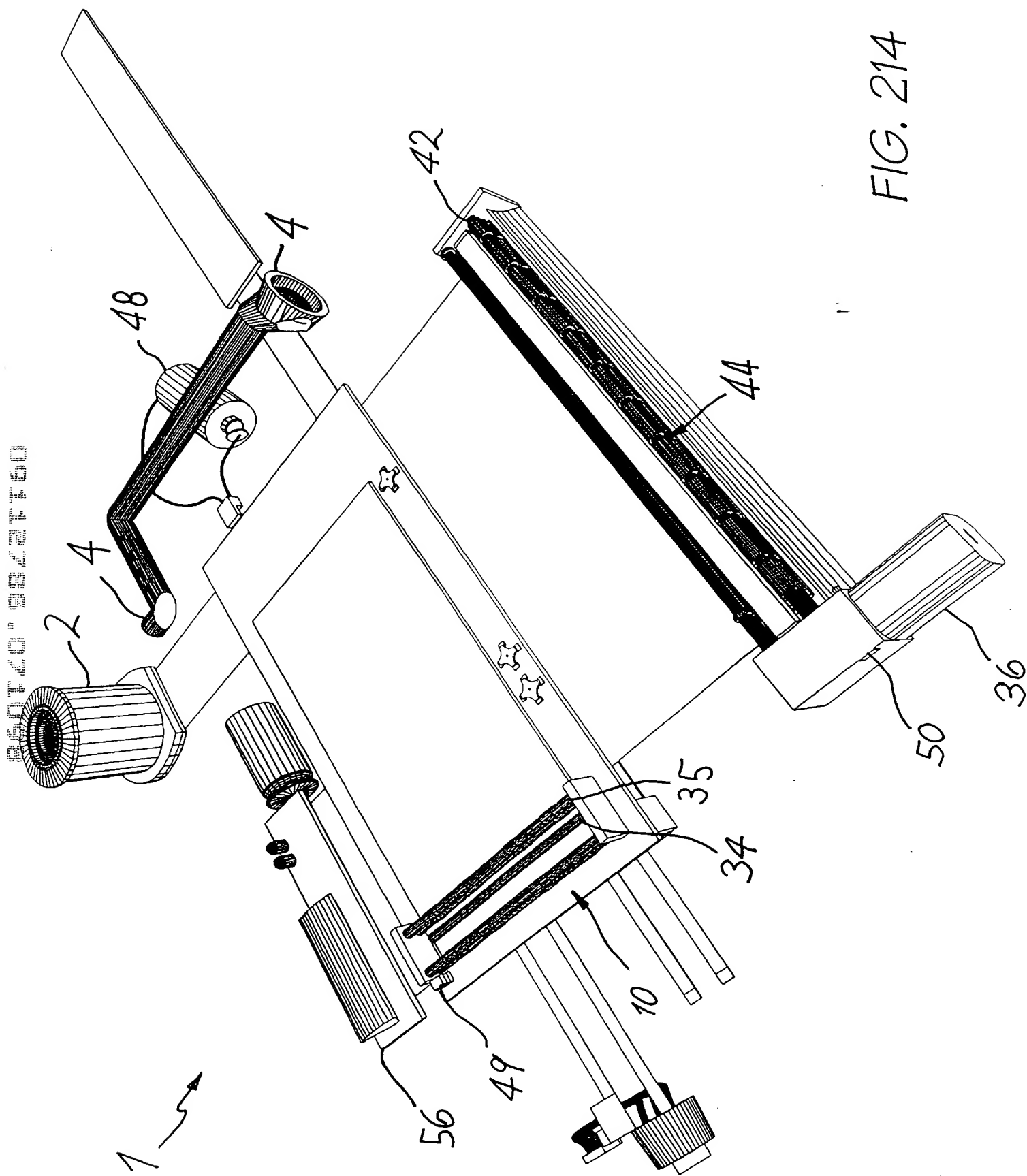


FIG. 214

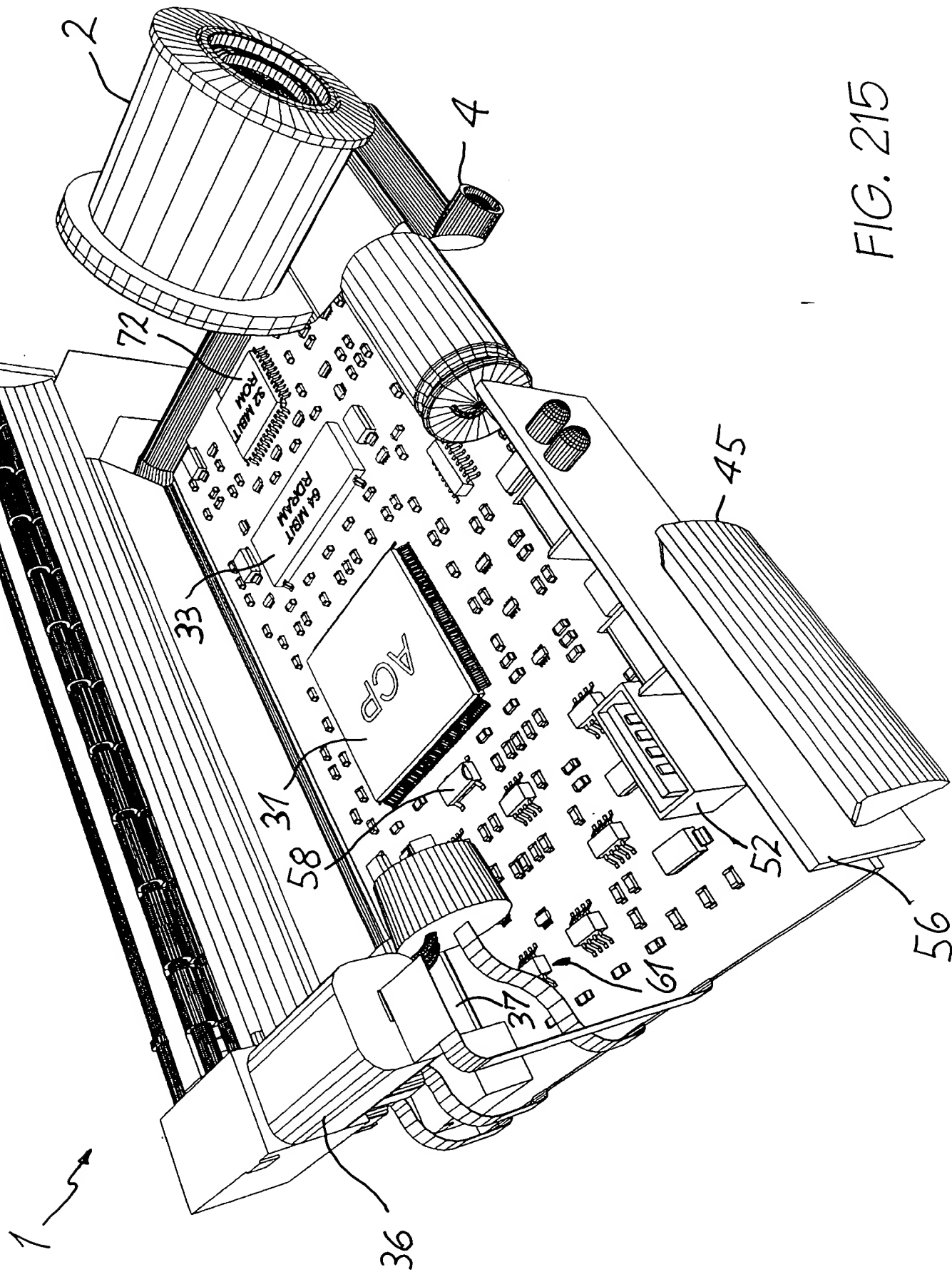
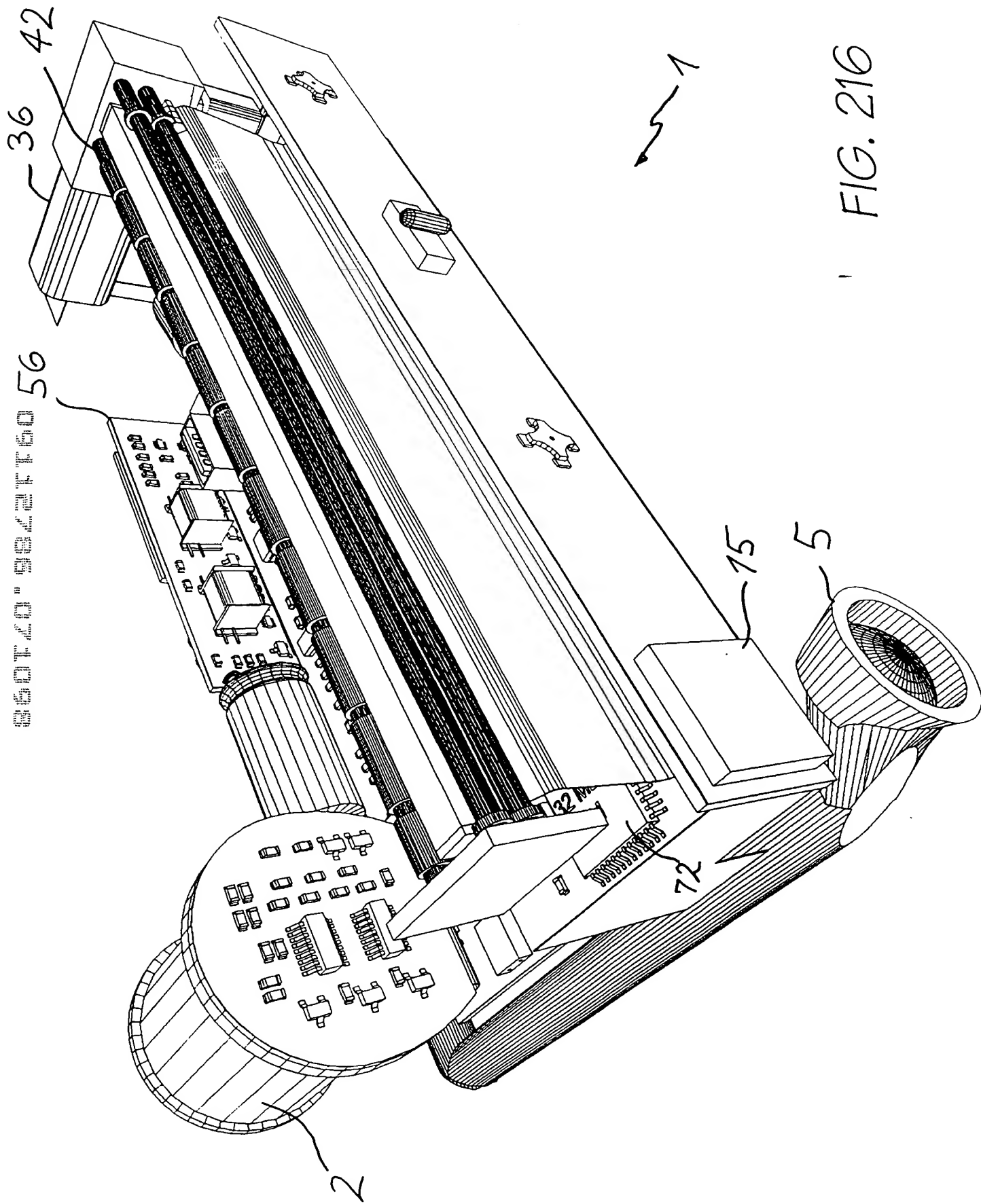


FIG. 215



860740" 98421160

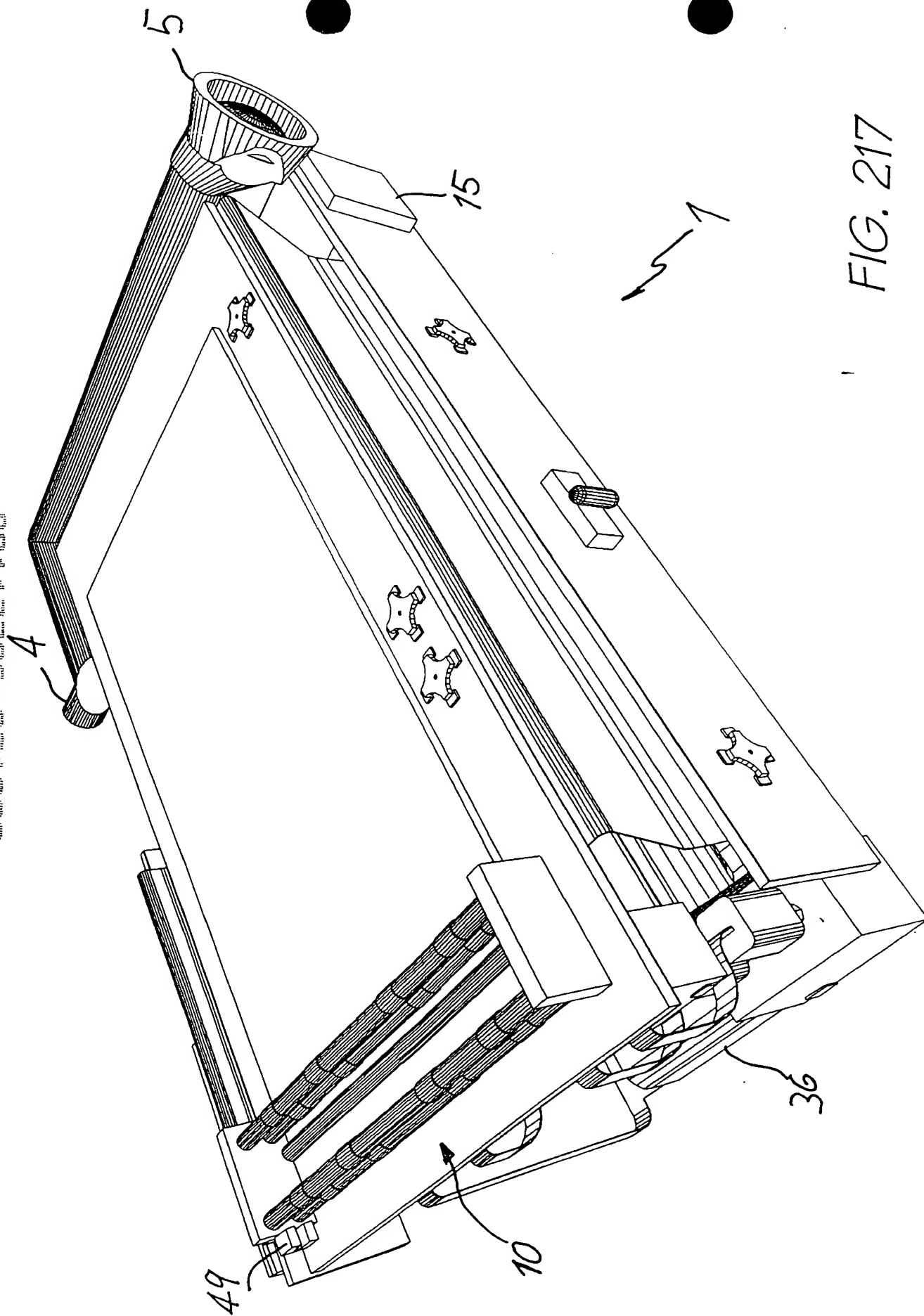


FIG. 217

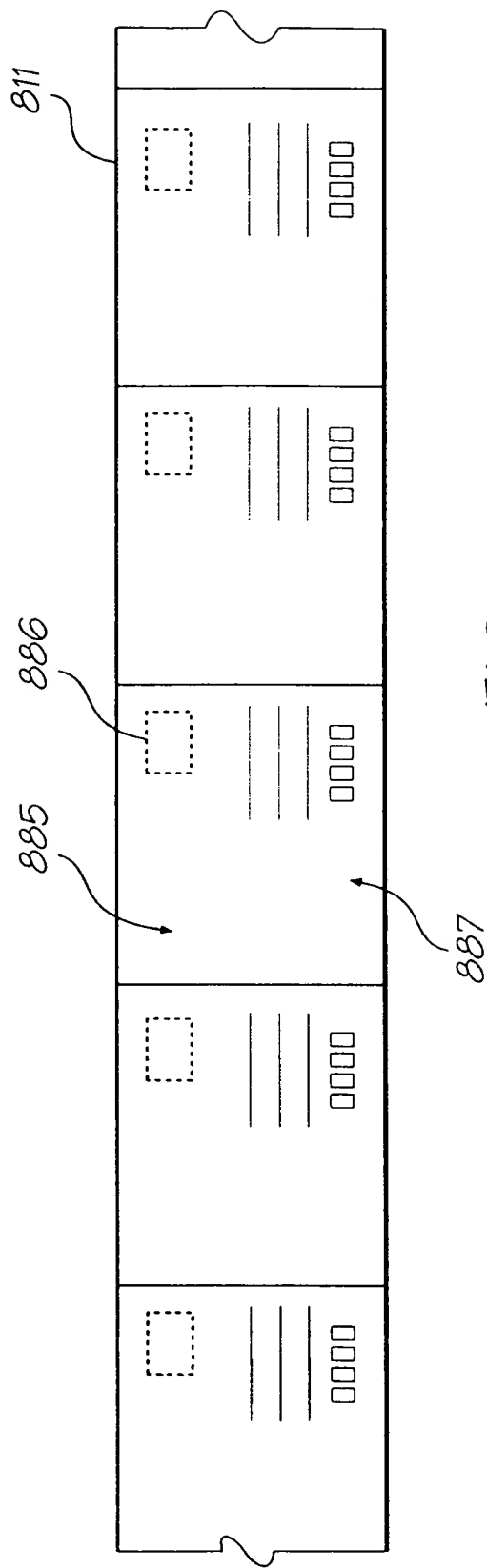


FIG. 218

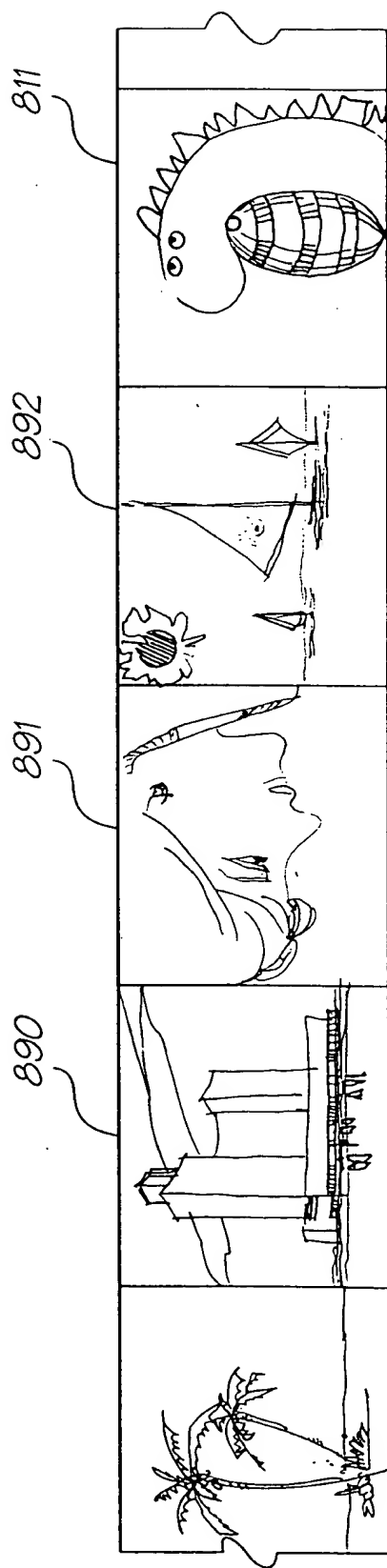


FIG. 219

860720" 9822160

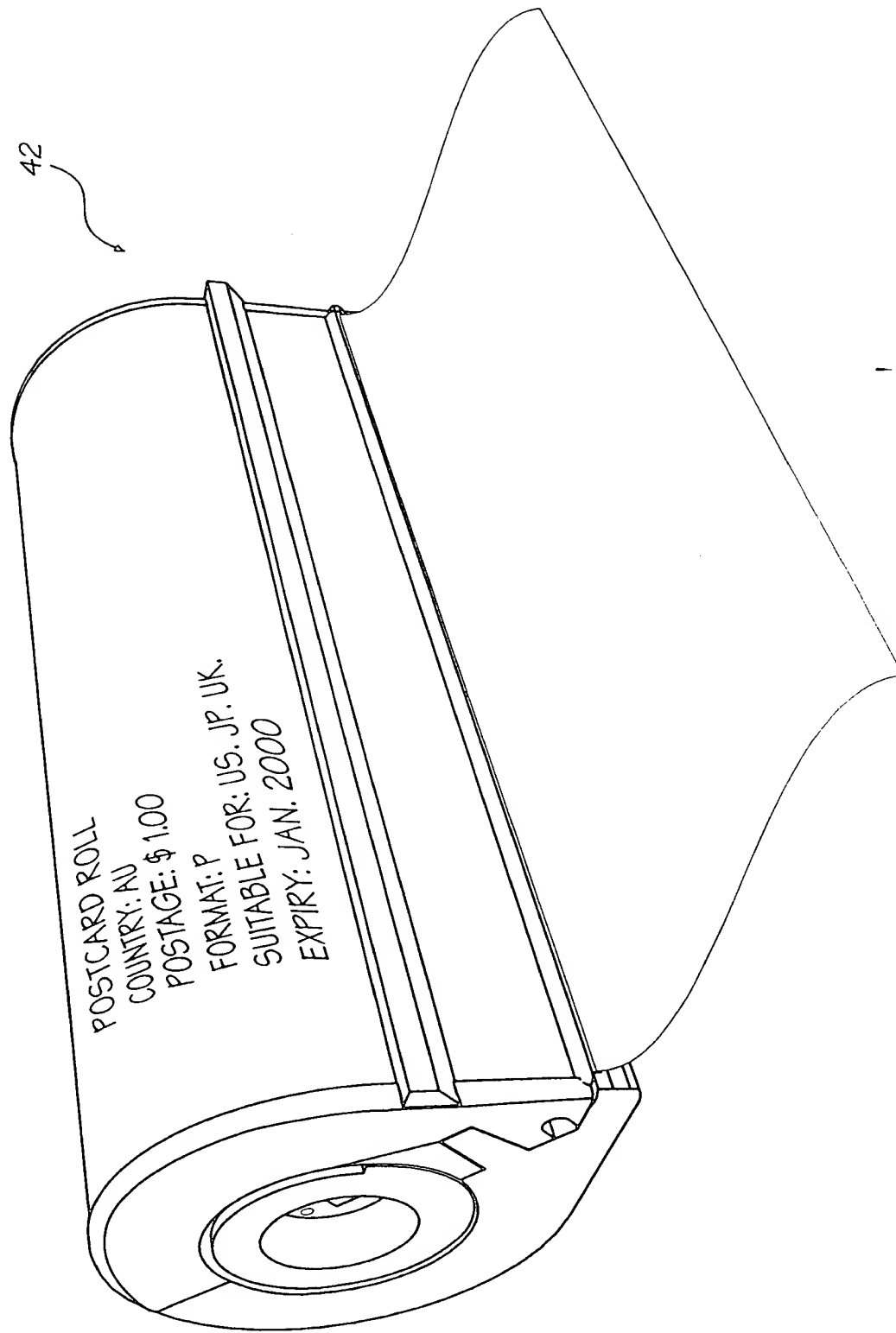


FIG. 220

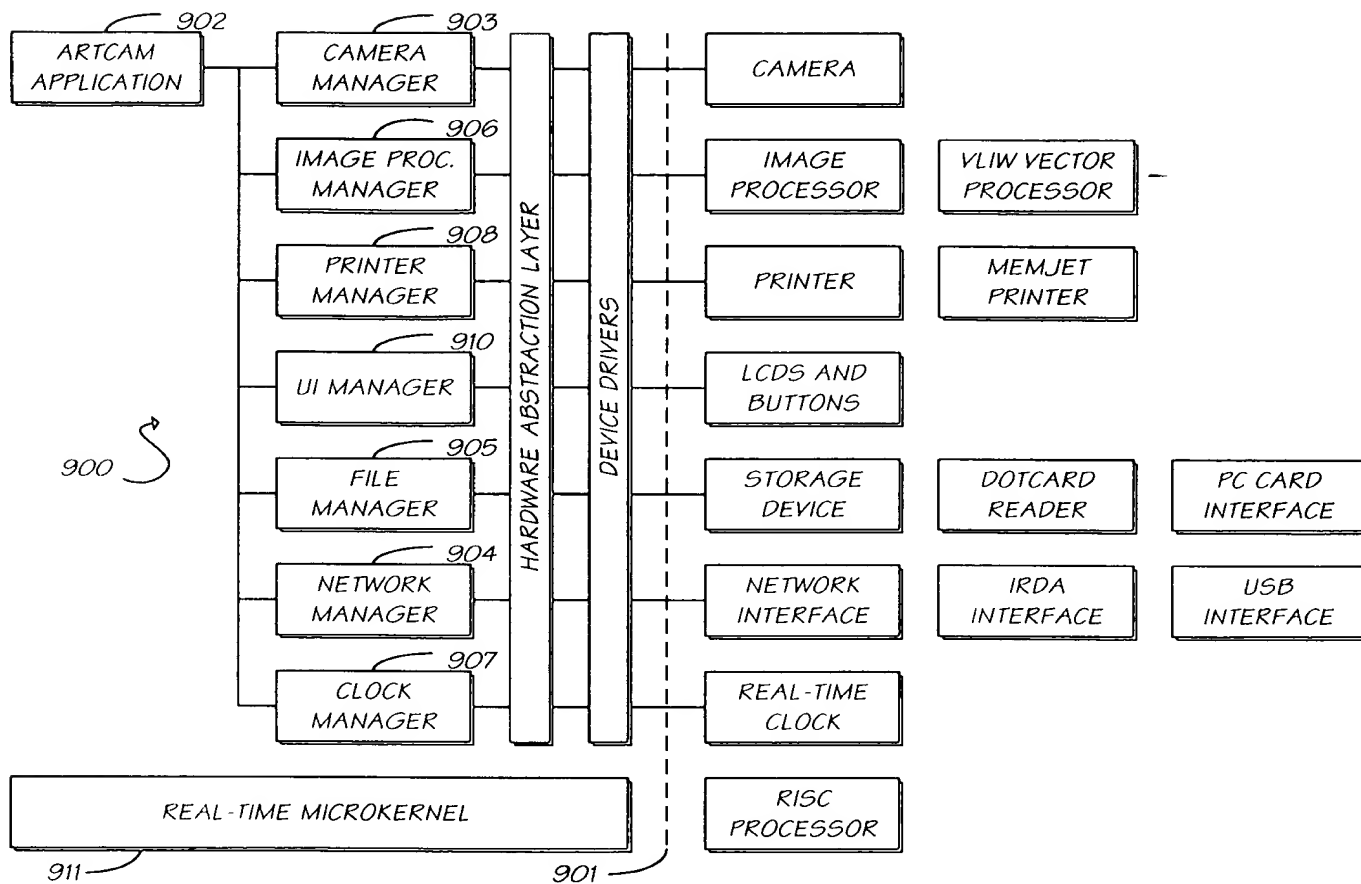


FIG. 221

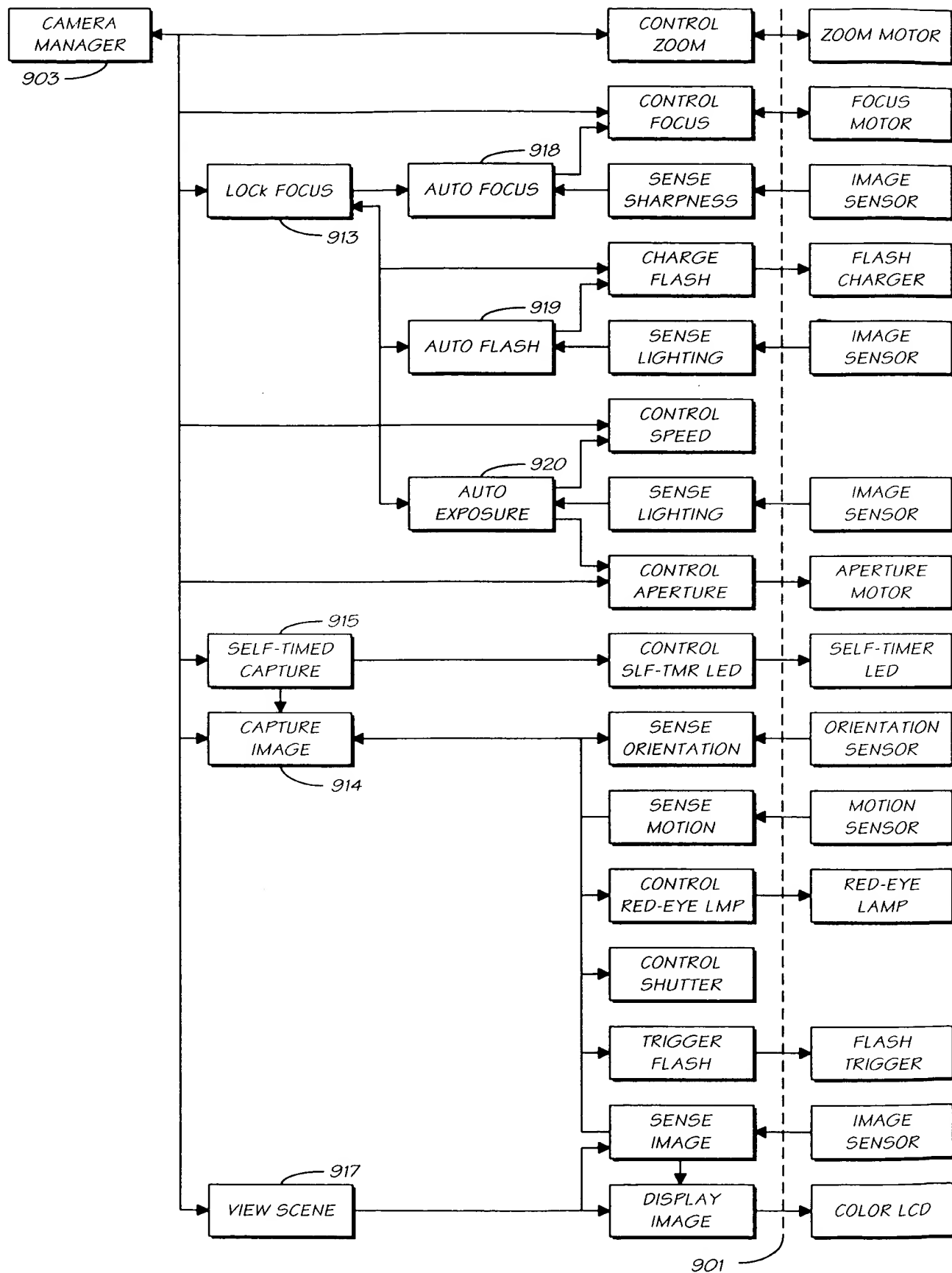


FIG. 222

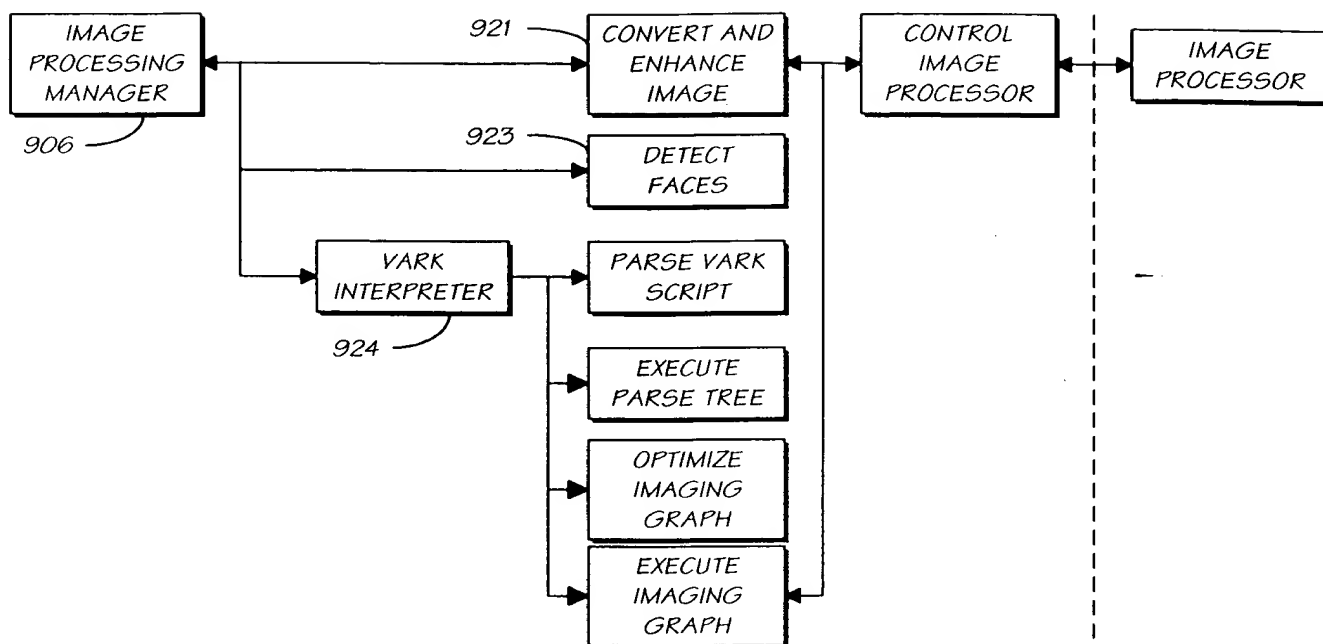


FIG. 223

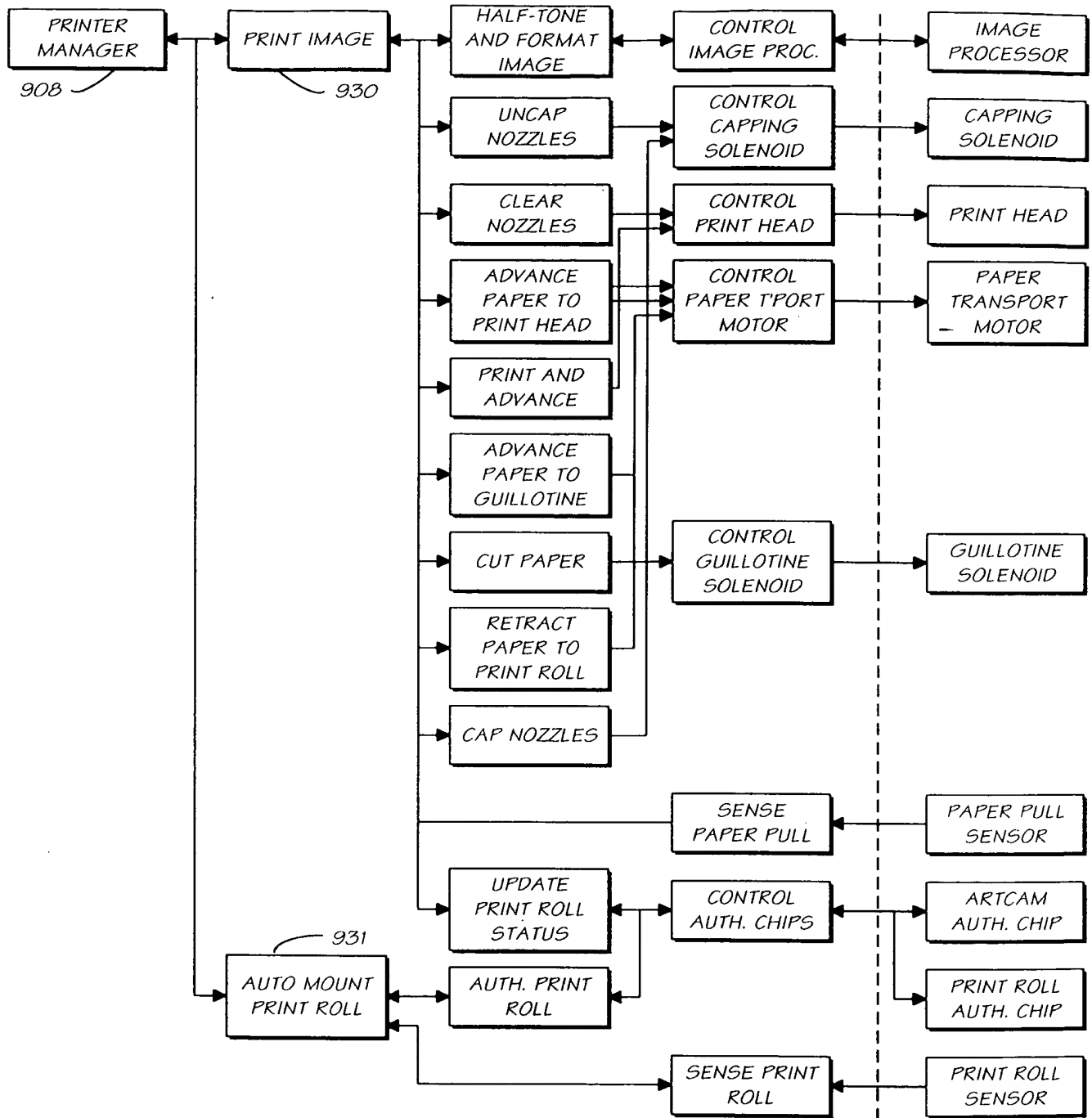


FIG. 224

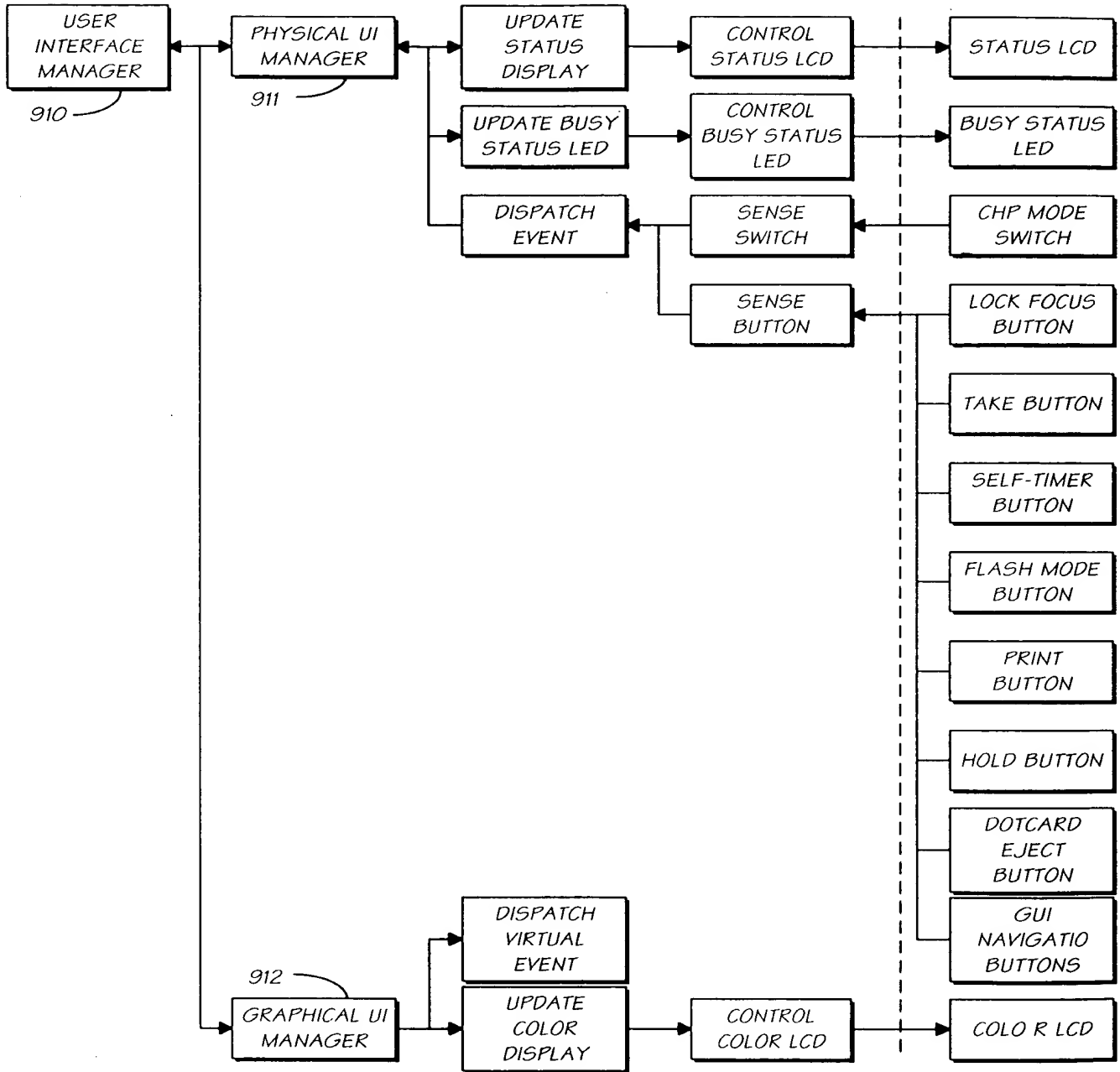


FIG. 225

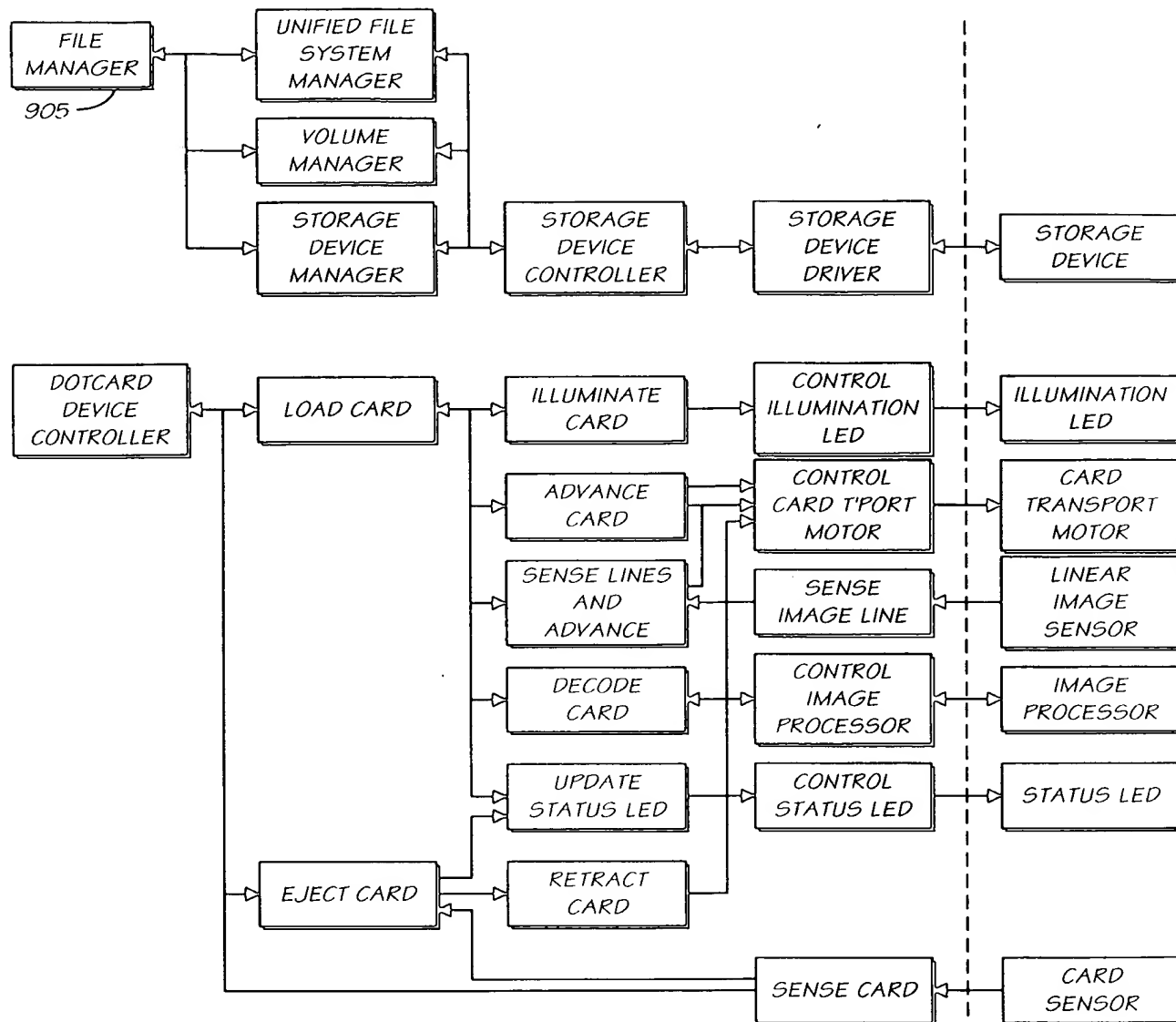


FIG. 226

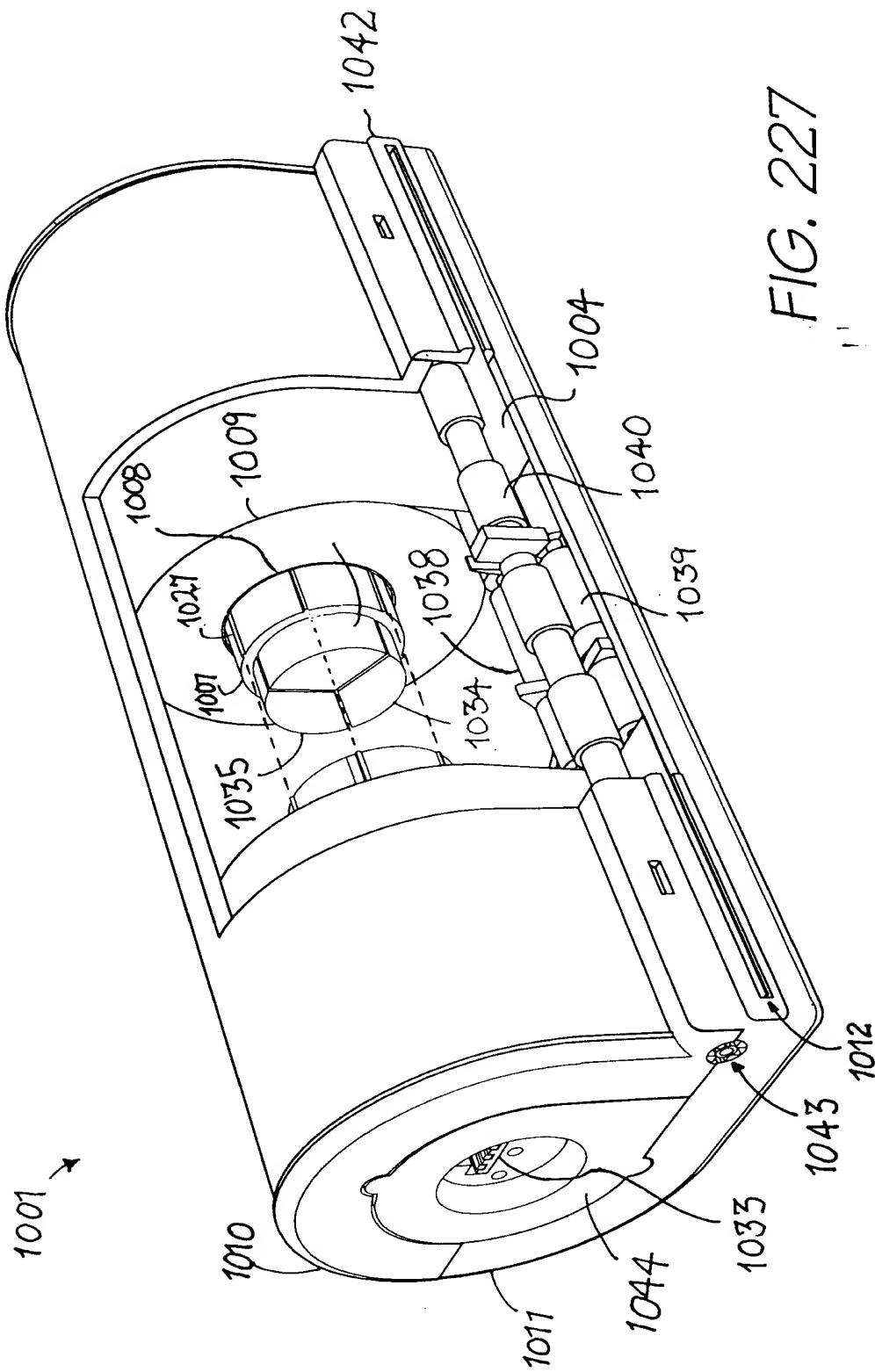
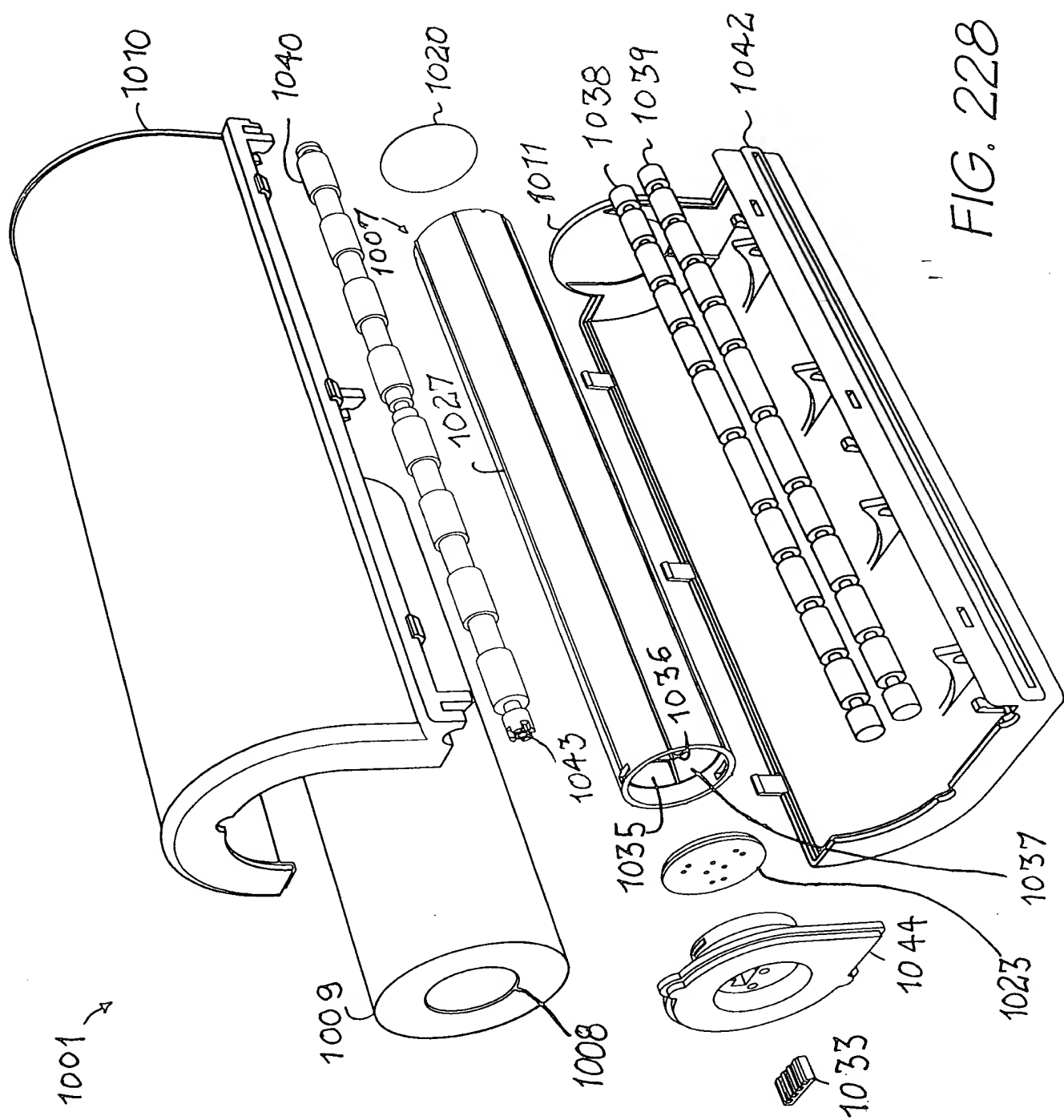


FIG. 227



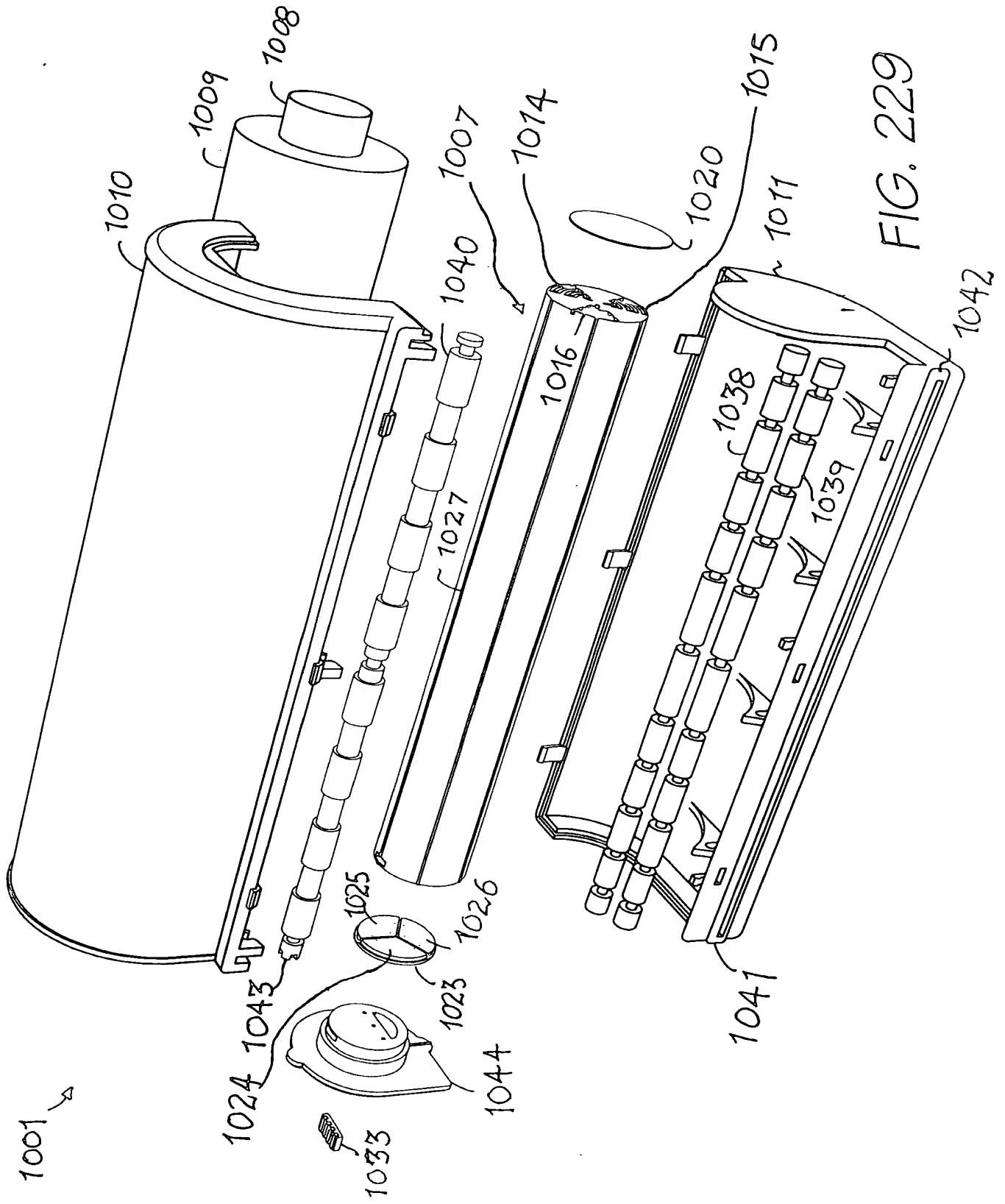
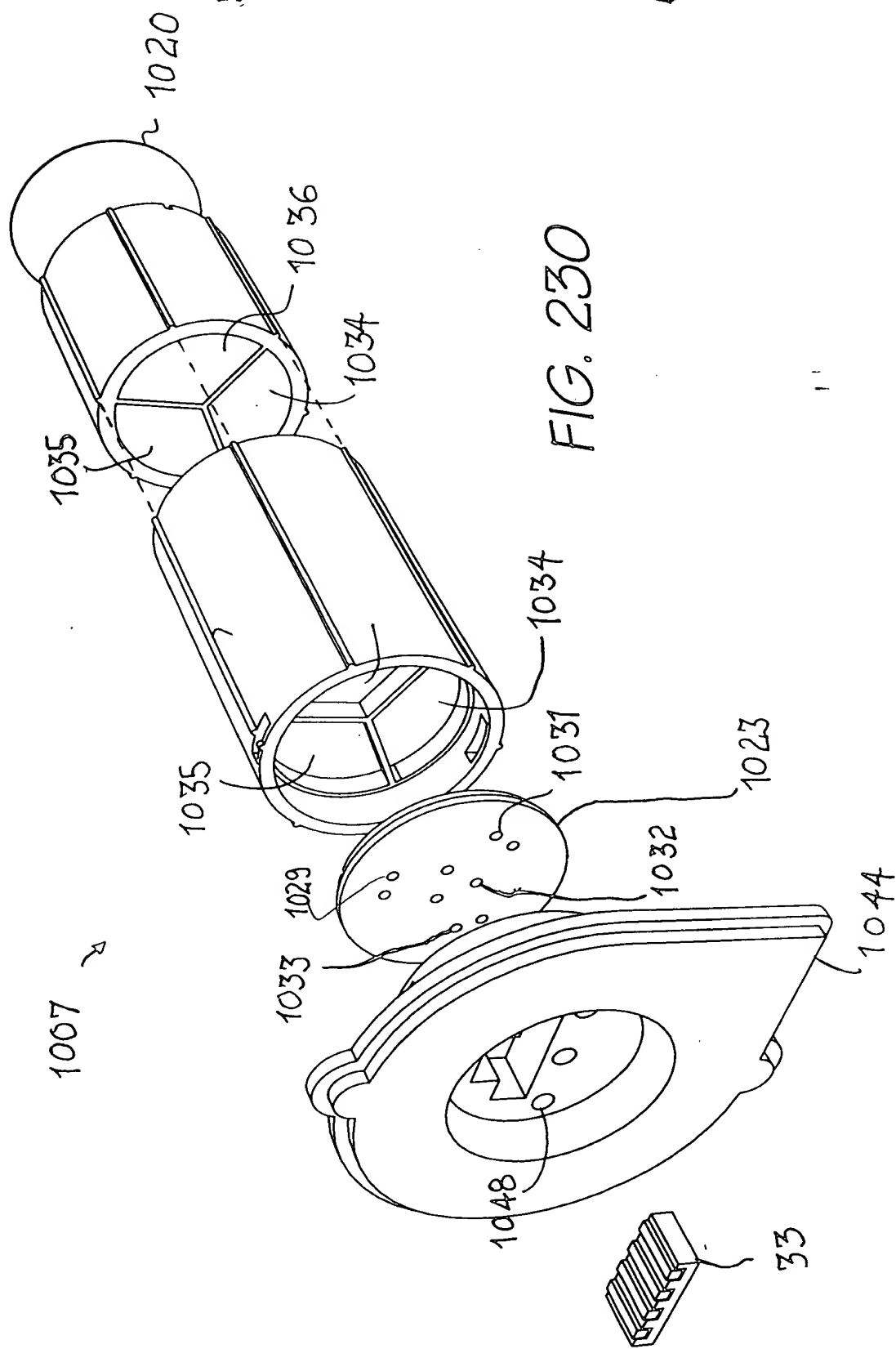


FIG. 229



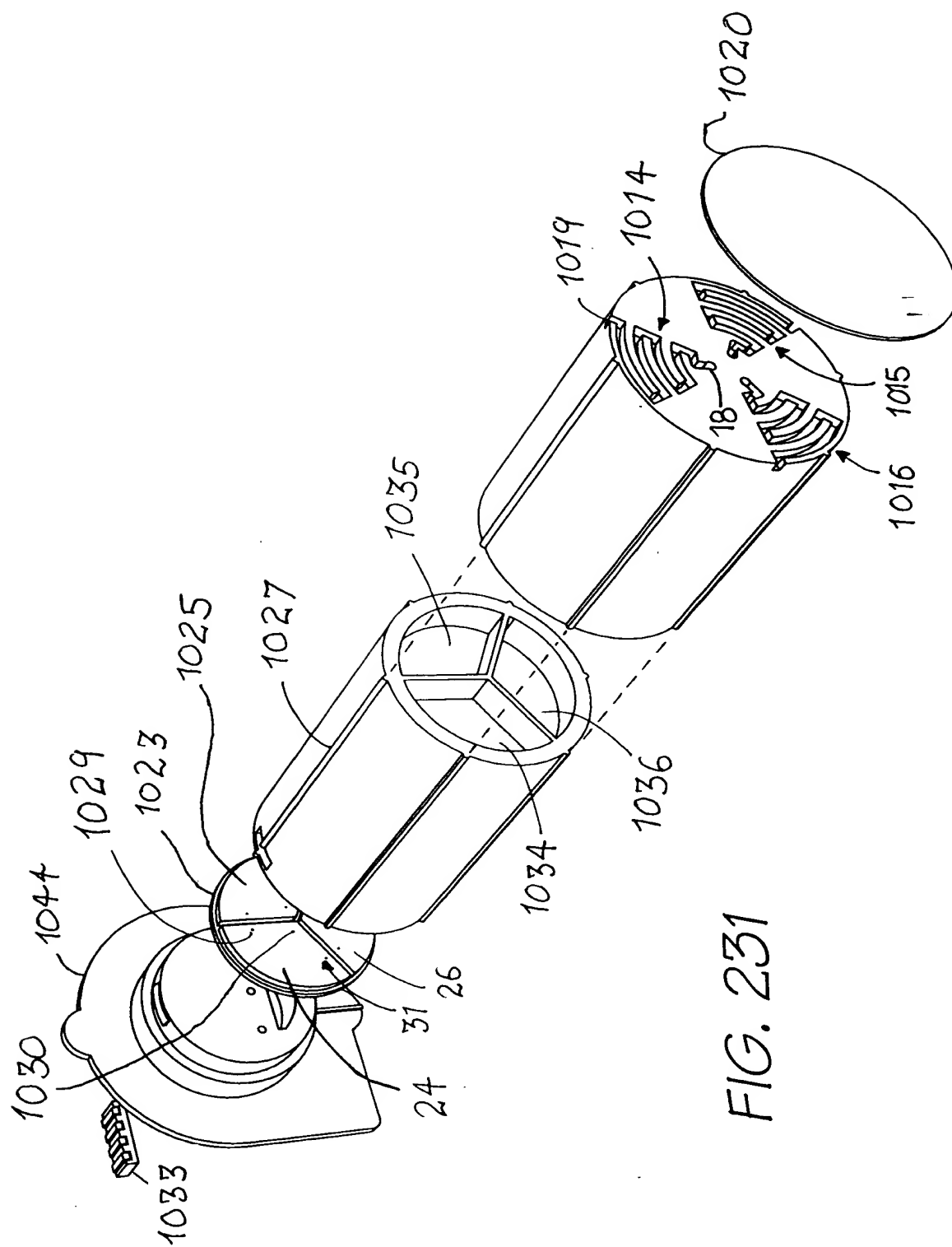


FIG. 231